THE physical therapy REVIEW

Second Congress
World Confederation for Physical Therapy
Hotel Statler, New York City
June 17 - 23, 1956

Associated Reactions of the Upper Extremity in Adult Patients with Hemiplegia: An Approach to Training — BRUNNSTROM

Effective Group Relations — FREEDMAN

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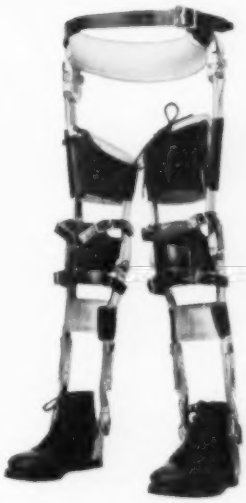

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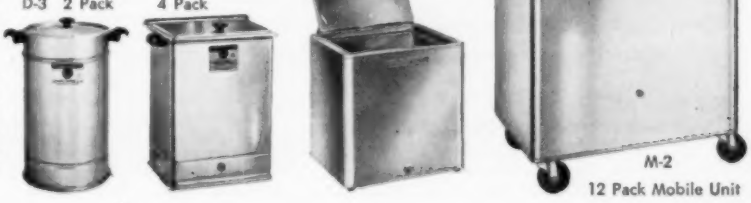

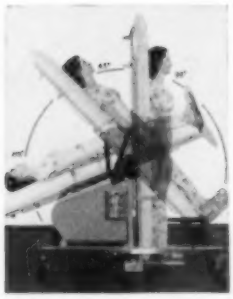

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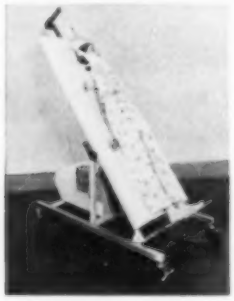

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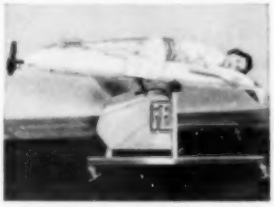

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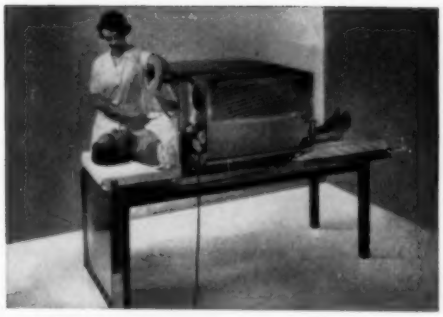

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The Physical Therapy Review

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Vol. 36 April 1956 Number 4

Associated Reactions of the Upper Extremity in Adult Patients with Hemiplegia

An Approach to Training

Signe Brunnstrom, M.A.

The physical therapist is called upon to train hemiplegic patients with varying degrees of involvement. When the involvement is mild, the patient usually responds comparatively well to training. Patients with more severe involvement may learn to ambulate with the aid of a brace and a cane, but these patients often fail to show return of function in the upper extremity.

When no voluntary motions are present in the hemiplegic upper extremity, in "flaccid" as well as in "spastic" cases, the physical therapist carries out passive motions for the purpose of maintaining or restoring normal range at joints. Muscle reeducation in the usual sense may be attempted, but if no response is obtained over a period of days, weeks, or months, the patient as well as the physical therapist may become discouraged, feeling that further attempts are useless.

While no unrealistic hopes should be aroused in regard to the hemiplegic upper extremity, no method of training which might produce desirable results should be left untried. It may well be that a subcortical motion synergy which can be elicited on a reflex basis may serve as a wedge by means of which a limited amount of willed movement may be learned. It is no doubt easier for the patient to gain control of a motion synergy which is already set up on a lower level than to learn more "cortical" patterns.

It has long been known that in patients with hemiplegia "associated reactions," reflex in nature, appear in the affected limbs when voluntary forceful motions of other parts of the body are performed. The reactions are characterized by increased tension about the joints, this tension involving anatomical agonists and antagonists simultaneously.

If the voluntary effort which elicits the reactions is strong and of some duration, movement synergies ("associated motions") of the hemiplegic limbs may appear, involving several or all of the joints of the limb. These motions are slow and laborious as if antagonistic muscle groups were engaged in a tug of war, with one group slowly gaining supremacy. When the movement ceases, either at full range or short of full range, tension about the joints continues. The limb is held in a rigid posture until the stimulus which elicited the reaction ceases; then tension gradu-

Consultant in Amputee Training, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, New York.

TABLE I

HEMIPLEGIC SUBJECTS TESTED FOR ASSOCIATED REACTIONS

Subject	Sex	Age	Diagnosis [x]	Date of onset	Classif. at time of test[xx]	Time after onset test was given
1	F	60	CVA	10-25-53	A	14 months
2	M	53	CVA	1-24-55	A	24 days
3	M	39	Trauma	6-2-54	C	8 weeks
4	F	47	Embolus	July '54	A	5 months
5	M	62	CVA	Dec. '53	D	18 months
6	M	72	CVA	5-10-54	C	5 weeks
7	F	61	Hemorrhage	1-11-54	A	3 months
8	F	57	Thrombosis	11-3-54	C	5 months
9	M	72	Tumor	4-6-54[xxx]	E	5 weeks
10	F	60	CVA	May '54	C	2 months
11	M	60	Hemorrhage	Dec. '53	C	6 months
12	F	48	CVA	10-16-48	C	4 years
13	M	77	Thrombosis	4-15-54	E	4 weeks
14	M	43	Thrombosis	Jan. '54	B	14 months
15	M	70	CVA	12-24-54	E	24 days
16	F	69	CVA	10-14-53	A	6 months
17	M	41	Embolus	July '54	A	2 months
18	F	38	CVA	1951	C	3 years
19	F	59	CVA	1-11-55	E	7 weeks
20	F	66	CVA	Jan. '54	E	6 months
21	M	72	CVA	1-17-54	D	7 months
22	M	60	CVA	3-23-55	A	10 weeks
23	M	58	CVA	1-29-54	A	5 weeks
24	M	30	Trauma	8-5-54	E	5 months
25	M	58	CVA	1-29-54	B	6 weeks
26	M	59	CVA	10-10-54	C	10 weeks

[x] Where a specific diagnosis had been made, this is given; the remaining cases are classified simply as CVA.

[xx] Classification:

A — Arm essentially flaccid, no voluntary motion

B — Spasticity of varying degree present, no voluntary motion

C — Spasticity of varying degree; voluntarily, patient is able to reproduce at least some part of either or both of the two hemiplegic motion synergies; grasp, but no release

D — Grasp and release, with some voluntary finger and thumb extension

E — Coordinated finger motions present, but skill and speed subnormal; many, but not all, motions at shoulder and elbow can be performed "out-of-pattern"

[xxx] Date of surgery. Mild hemiplegia seen post-surgically; condition prior to surgery not known.

ally diminishes and the limb returns to approximately the original position.

According to Riddoch and Buzzard, associated movements are "automatic activities which fix or alter the posture of a part or parts when some other part of the body is brought into action by either voluntary effort or artificial reflex stimulation."

Walshe states that associated reactions, in respect to stimulus, latency, form and duration, present all the characteristics of tonic or postural reflexes.

The influence of the position of the head on associated reactions was investigated by Simons, who found that in patients with hemiplegia these reactions, to a remarkable extent, resembled the tonic neck reflexes in animals, as described by Magnus. While in decerebrate animals, motions of the limbs appear when the head is moved passively, Simons found that in hemiplegic patients passive head motions seldom produced limb motions, but that the reflexes often appeared when a voluntary effort in another part of the body was used as reinforcement.*

*Abstracts of Chapter III of Magnus' book "Körperstellung" and of Simons' article "Kopfhaltung und Muskeltonus" are found in June and August 1953 issues of the *Physical Therapy Review*.

Dr. Temple Fay has long advocated the use of reflexes in the training of patients with upper motor neuron lesions. Reflex motions are elicited which activate the basic spinal cord, nerve arcs, and units. These movements aid in maintaining flexibility at the joints, simultaneously building up muscle strength and improving circulation. As training proceeds, certain basic reflexes may be "captured," that is, the patient may learn to reproduce them on a voluntary basis. A conditioning of the reflex is then attempted in order that these primitive motions may be applied to useful simple activities.

It would seem as if "associated reactions" as described by Walshe, Simons, and others, could well be used as the basis for training patients with hemiplegia. The course of the training, in general, would follow that set up by Dr. Fay and elaborated by his associate, Glenn J. Doman, physical therapist, in regard to other reflexes; that is, reflex elicitation of the motion synergy would be employed until the patient had "captured" the reflex, then a conditioning of the reflex would be attempted.

The investigation described here was undertaken in order to obtain more information about associated reactions in adult patients with hemiplegia. It was felt that these reactions must be better understood, if they are to be used effectively in training.

A preliminary investigation of associated reactions was done at the Kessler Institute for Rehabilitation during 1951 and 1952. Patients were tested in supine, prone, sidelying, sitting and standing positions. The resisted motions used to elicit reactions included squeezing a dynamometer in the normal hand, elbow flexion and extension, hip and knee motions, and head motions.

As a whole, the results obtained were in accordance with Simons' findings, a definite influence of the position of the head being observed ("flexion of the skull limbs, extension of the jaw limbs"—Magnus). However, in some cases contradictory reactions, hard to explain, were obtained.

Simons was of the opinion that any kind of resisted motion could be used to elicit the reflex, provided the effort was strong and sustained, and that the type of resulting motion (flexion or extension synergy) would be determined solely by the position of the head. Walshe, on the other hand, observed that in some cases the type of voluntary motion employed had an effect on the type of response, but he did not come to any definite conclusions.

It seemed of considerable interest, both from a theoretical and from a practical standpoint, to attempt to determine if a definite relationship existed between the type of resisted motion employed and resulting associated reactions. A second study was therefore set up, this time at the Burke Foundation, White Plains, New York, and data were collected between March 1954 and May 1955.

Experience gained during the preliminary investigation at the Kessler Institute greatly aided in planning the testing procedure. During this second study, 26 patients with hemiplegia were tested for associated reactions.

Table I gives pertinent information regarding these patients. Two of the patients had suffered a traumatic hemiplegia, 1 was a postoperative case of brain tumor, and the remaining 23 cases were classified as cerebral vascular accidents. The patients in the CVA group were between 38 and 77 years of age, the largest number being 50 to 70 years of age. The time after onset that the tests were given ranged from 3 weeks to 4 years.

TESTING PROCEDURE

Choice of Testing Position

The routine testing of patients in supine, prone, sidelying and sitting positions was abandoned because it proved time consuming for the physical therapist and too fatiguing for many patients.

The supine position was chosen as the standard testing position, while informal observations of responses were made in other positions. The reasons for this choice were:

1. For elderly people, the supine position is a comfortable one, and discomfort must be avoided if associated reactions are to appear in a relatively undisturbed form.
2. In the supine position, labyrinthine influence, if present, favors extension. This possible aid in extension should be taken advantage of, since previous observations indicated that, generally, an extension synergy is more difficult to elicit than a flexion synergy.
3. In the supine position, the reactions of the lower extremity as well as those of the upper extremity are readily observed.

The other positions originally used were found less favorable. The prone position was uncomfortable for the patient and reactions were diffi-

cult to observe. In the prone position, it was reasoned, labyrinthine influence might predispose to flexion to such a degree that the extension synergy would not appear. In the sidelying position, the underlying limbs would be prevented from moving freely by the superimposed body weight; furthermore, this position might facilitate "flexion of the uppermost and extension of the underlying extremities" (thalamic posture of Bieber and Fulton), which would complicate matters when testing for associated reactions. The sitting position was a favorable one for testing of the upper extremity, but associated reactions of the lower extremity were difficult to observe.

Preparation of the Patient for Testing

The patient lies supine on a treatment table with the affected arm resting on a folded blanket or towel, elbow slightly flexed; the hand is supported on the blanket in such a manner as to permit freedom of motion if an associated reaction appears. (In some patients an assistant may have to support the forearm and hand lightly without aiding the motion in any way). A quiet and restful surrounding is provided and the patient is given several minutes of rest before testing begins.

Type of Motion Employed to Elicit Reactions

Preliminary observations suggested that the type of resisted motion used on the normal side may have a definite influence on the character of the reaction. It seemed reasonable to assume that a resisted limb motion on the normal side would facilitate either the *same* or the *opposite* motion on the hemiplegic side (flexion facilitating flexion, extension facilitating extension, or flexion facilitating extension, and extension facilitating flexion).

The movement synergies which appear as associated reactions are rather uniform in all patients, at least as far as the proximal joints are concerned. It was therefore decided to use the two movement synergies, or some of their strongest and most consistent components, as resisted motions on the normal side. This would aid in observing whether the *same* or the *opposite* type of reaction was facilitated on the hemiplegic side.

In acordance with this reasoning, squeezing a dynamometer was omitted, since closing of the fist does not occur exclusively in one synergy, but may accompany a flexion as well as an extension synergy.

The two motions chosen for the upper extremity were "resisted pull," with strong resistance to elbow flexion (flexion synergy), and "resisted push," incorporating not only extension of the elbow and pronation of the forearm, but also adduction and internal rotation at the shoulder (extension synergy).

For the lower extremity, resisted dorsiflexion ("pull") and resisted plantar flexion ("push") were chosen rather than the entire flexion and extension synergies. This decision was made because resisted hip-knee motions sometimes caused the patient to slide on the table—such instability tended to produce tension in all parts of the body which disturbed the reactions.

Head Positions for Testing

1. **Head in neutral position.** Testing always started with the head straight, so that the associated reactions would not be influenced by the tonic neck reflex. The observed reactions would indicate whether in a particular patient the flexion or the extension synergy predominated, and also, more clearly than in the following two positions, in what manner the contralateral motion influenced the reactions.
2. **Head rotated toward the affected side.** With the head in this position, the tonic neck reflex would facilitate extension.
3. **Head rotated toward the normal side.** In this position the tonic neck reflex would facilitate flexion.

The order of testing was important. An attempt was always made to elicit extension before flexion, because it had repeatedly been observed that an extension synergy of the upper extremity was more difficult to obtain if preceded by a number of flexion reactions. The flexion synergy, on the other hand, would usually appear readily even if extension had been elicited beforehand.

Because of the latency inherent in postural reflexes, a brief pause of 30 seconds or more was permitted after each change in head position before testing was resumed. This was done in order to insure that one reaction had subsided before the next one was elicited.

Other head positions (head ventriflexed, dorsiflexed, or laterally flexed) were not tested routinely. It had previously been observed that reactions to these head positions were less marked and less consistent than rotation of the head.

BURKE FOUNDATION PHYSICAL MEDICINE - REHABILITATION SERVICE

TEST FOR ADULT PATIENTS WITH HEMIPLEGIA

LT.___ FACE___

NAME_____ AGE____ ONSET_____ RT.___ SPEECH___

DATE OF TEST_____

	UPPER LIMB	LOWER LIMB
ACTIVE MOTIONS no facilitation (describe)		
ASSOCIATED REACTIONS (supine)		
Head Straight		
Resisted pull		
" push		
" dorsiflexion		
" plantar flexion		
Head Turned Left		
Resisted pull		
" push		
" dorsiflexion		
" plantar flexion		
Head Turned Right		
Resisted pull		
" push		
" dorsiflexion		
" plantar flexion		
ACTIVE MOTIONS using tonic neck reflex (describe)		
SENSORY INVOLVEMENT - SKIN		
POSITION SENSE		
STEREOGNOSIS		

Remarks

Figure 1. Test form for associated reactions for adult patients with hemiplegia.

Instructions to Patient

The patient's attention was focused on the normal side and he was told that a test was to be given for the unaffected limbs to determine their strength. Drawing the attention away from the affected limbs was particularly important in patients who had some return of voluntary motion, in order to prevent, as much as possible, voluntary impulses from confusing the reactions. A maximum and sustained effort was encouraged, except in patients whose general condition did not permit sustained effort. If the patient became startled when an associated movement appeared, and this was not uncommon, he was reassured and told that such motions could be expected.

Testing Personnel

To promote uniformity in testing, only one person administered all the tests.

Testing Chart

For recording of data a testing form, figure 1, was utilized. This form allows the recording of the effect of the four previously described

resisted motions, with head straight, turned left and turned right, on the lower, as well as on the upper extremity. Space is also provided for brief notes on sensory involvement, including position sense and stereognosis. A cross (×) may be made to indicate where strong reactions appear and this is used as a guide for subsequent training sessions.

TYPE OF ASSOCIATED REACTIONS OBSERVED

The reactions seen in the hemiplegic limbs were essentially of two types, a flexion synergy and an extension synergy. Where entire patterns of motions appeared they were very similar and were often identical with those described by Simons and others. Only the reactions of the upper extremity will be discussed in this paper.

Flexion Synergy of the Upper Extremity

The following components of the flexion synergy were found relatively consistent:

1. Retraction of the shoulder girdle.
2. Abduction and external rotation of the shoulder. Frequently, hyperextension appeared instead of abduction and external rotation.
3. Flexion of the elbow and supination of the forearm.

In the majority of patients the trapezius contracted vigorously, but the contraction of the serratus anterior was minimal or absent. Hence the shoulder girdle was retracted and elevated, but the scapula failed to rotate sufficiently to produce full abduction of the arm (Figure 2). In practically all instances, flexion of the elbow was consistently the strongest component of the flexion synergy.

Common variations of the flexion synergy are presented in figures 3a, 3b, and 3c. These were demonstrated by patients who were able to produce the flexion synergy on a voluntary basis. The form of willed motion, it should be noted, was identical with the reflex movement (compare Figures 2 and 3a).

Evidence to date suggests that supination of the forearm (Figures 3a and 3b) is an inherent, although sometimes weak component of the flexion synergy. Pronation as observed in some patients (Figure 3c) may be produced by the weight of the hand and tension in wrist flexors. Note that in these patients the forearm does not offer resistance to passive supination if the wrist is kept flexed.

Extension Synergy of the Upper Extremity

With the appearance of the extension synergy (Figures 4 and 5), a complete reversal of muscular action, as compared to the flexion synergy,

Figure 2. Associated reaction (flexion synergy) elicited by resisted "pull" on normal side (Subject 3). Head is rotated toward normal side to reinforce the reflex.

Figure 3a

Figure 3b

Figure 3c

Figure 3. Three variations in the flexion synergy, performed voluntarily.

3a. Subject 3. Pattern is identical with the associated motion in figure 2; serratus anterior action is poor or absent.

3b. Subject 10. Less abduction, more hyperextension of shoulder; marked supination of forearm.

3c. Subject 5. Serratus anterior action is good; forearm is held in pronation by the weight of the hand and tension in wrist flexors.

takes place. The following components of the extension synergy were found to be relatively consistent:

1. Protraction of the shoulder girdle, effected mainly by the pectoralis major.
2. Adduction and internal rotation of the shoulder.
3. Extension of the elbow and pronation of the forearm.

Pronation always accompanied elbow extension. In fact, these two motions seem to be so closely related that elbow extension can be effectively blocked if the forearm is passively supinated.

In patients tested 3 to 6 weeks after onset the entire pattern was seldom obtained. Adduction and internal rotation of the shoulder frequently appeared at this time, while elbow extension was incomplete or did not occur. When the patients first learned to produce the extension synergy voluntarily, elbow extension often lagged behind the shoulder components (Figure 6). This indicates that elbow extension is a weak component of the extension synergy, while adduction and internal rotation of the shoulder are strong components. Quite consistently, the pectoralis major was the most strongly activated muscle and the one to contract first.

Figure 4. Associated reaction (extension synergy) elicited by resisted "push" on normal side (Subject 3). Head is rotated toward the affected side to reinforce the reflex.

TABLE II

ASSOCIATED REACTIONS OF HEMIPLEGIC UPPER EXTREMITY HEAD IN NEUTRAL POSITION

Obtained in 23 patients in group of 26
Subjects 9, 13, and 20 had no demonstrable reactions

Reactions obtained on affected side	MOTIONS OF NORMAL SIDE USED TO ELICIT ASSOCIATED REACTIONS							
	Resisted "pull"		Resisted "push"		Resisted plant. flex. of foot		Resisted dorsi-flex. of foot	
	No. of cases	Subject identif.	No. of cases	Subject identif.	No. of cases	Subject identif.	No. of cases	Subject identif.
Undetermined reactions	three	15,16,22	four	2,4, 16,22	ten	1,2,4,10, 12,14,15, 17,22,24	eight	1,2,4,10, 12,15, 17,22
"Conflict"	zero		one	3	zero		zero	
Entire flexion synergy or several of its components	eighteen	1,2,3,4, 5,6,7,8, 10,11,12, 17,19,21, 23,24,25, 26	six	6,11, 14,23, 25,26	six	3,7,8, 19,21 26	seven	3,7,8, 14,19, 21,26
Entire extension synergy	zero		one	8[x]	zero		zero	
Partial ext. synergy: shoulder component, but no elbow component seen	zero	14,18	eleven	1,5,7,10, 12,15,17, 18,19,21, 24	zero		one	24

[x] This subject had received some training using associated reaction technic prior to test.

Figure 5. Extension synergy produced on a partially voluntary basis (Subject 3). Reinforcement by head positioning and mild resistance to "push" on contralateral side; pattern of motion is identical with the associated reaction shown in figure 4.

Figure 6. Partial extension synergy produced voluntarily. Shoulder component is strong while elbow extension is incomplete.

Wrist and fingers were inconsistent. The fist was often clenched and the wrist dorsiflexed during extension (Figures 4 and 6), but finger flexion also frequently accompanied the flexion synergy (Figure 2). Finger extension was never seen as a component of either of the two synergies.

It is interesting to note at this time that in standing and walking the most commonly seen posture of the hemiplegic upper extremity incorporates the strongest components of the two motion synergies, that is, *adduction and internal rotation at the shoulder* and *flexion at the elbow.*

Discussion of Testing Results for the Upper Extremity

Associated reactions were observed in 23 of the 26 cases tested while no reactions could be elicited in 3 patients. Subjects 9, 13 and 20 who failed to respond had made excellent recovery at the proximal joints and were also able to perform simple coordinated finger motions. Extensive return of voluntary control, however, did not always eliminate reactions, as demonstrated by subject 24, tested 5 months after injury. The reactions, generally, were more pronounced in the younger patients.

Since data were missing from some of the testing charts, the total number of reactions reported in each column in tables II-IV does not always add up to 23. The effect of resisted foot motions on the upper extremity was not tested in every patient.

It seemed of interest to indicate in tables II-IV the number of subjects and the identity of those subjects who reacted in a certain manner. A "subject identification" column was therefore included. By consulting table I, additional information regarding each patient may be obtained.

Under "undetermined reactions" are recorded those reactions which either were so mild that the pattern could not be determined, or which involved an increase in tension in muscles about the joints, without definite predominance of flexion or extension. "Conflict" indicates that minimal alternating motions occurred, as though two antagonistic responses were acting against each other.

Frequency of Appearance of the Two Synergies

The flexion synergy, usually both shoulder and elbow components, was elicited in 21 of 23 cases; in 19 of the 21 subjects the reaction appeared with the head in the neutral position; only in 2 cases was reinforcement by the tonic neck reflex needed to bring out the reaction.

The extension synergy, or some of its components, was elicited in 19 of the 23 subjects; the shoulder component (internal rotation and adduction) usually appeared readily while the

TABLE III

ASSOCIATED REACTIONS OF HEMIPLEGIC UPPER EXTREMITY
HEAD ROTATED TOWARD NORMAL SIDE

Obtained in 23 patients in group of 26
Subjects 9, 13, and 20 had no demonstrable reactions

Reactions obtained on affected side	MOTIONS OF NORMAL SIDE USED TO ELICIT ASSOCIATED REACTIONS							
	Resisted "pull"		Resisted "push"		Resisted plant. flex. of foot		Resisted dorsi-flex. of foot	
	No. of cases	Subject identif.	No. of cases	Subject identif.	No. of cases	Subject identif.	No. of cases	Subject identif.
Undetermined reactions	one	15	nine	1,2,4,10, 15,19,22, 23,25	eight	1,2,4, 12,15, 17,19,24	nine	1,2,4, 12,15, 17,19, 21,22
"Conflict"	two	(14) 18	one	10	zero		one	26
Entire flexion synergy or several of its components	twenty	1,2,3,4, 5,6,7,8, 10,11,12, 16,17,19, 21,22,23 24,25,26	seven	6,9,11, 12,(14) 24,26	seven	3,7,8, 10,14, 21,26	six	3,7, 8,10, 14,24
Entire extension synergy	zero		three	3,5,7	zero		zero	
Partial ext. synergy: shoulder component, but not elbow component seen	zero		three	17,18,21	zero		zero	

elbow components (extension and pronation) were more sluggish. In 13 of the 19 subjects the reaction appeared with the head in the neutral position; reinforcement by the tonic neck reflex was required to elicit the synergy in 6 cases. Elbow extension was obtained in only 11 of the 19 subjects, and "double reinforcement"—contralateral "push" and tonic neck reflex—had to be used to produce the reactions.

Influence of the Tonic Neck Reflex

In most of the subjects, a definite influence of the tonic neck reflex was seen, and this influence was in accordance with Magnus' rules. Occasionally, the effect of the contralateral motion, if opposing the tonic neck reflex, was found to be strong enough to overcome the neck reflex.

Influence of Contralateral Motion

In cases where a definite influence of the contralateral motion could be seen, it was found that in the upper extremity, with one exception, *flexion facilitated flexion* and *extension facilitated extension*. In the lower extremity, on the other hand, *flexion facilitated extension* and *extension facilitated flexion*, and no exception was found.

During several years of informal clinical observations and one year of recording data, the "pull-producing-pull" rule for the upper extremity applied without exception. Then, in March 1955, one case (Number 14) was found who had the opposite reaction, that is, a "push" produced a "pull," and a "pull" produced a "push." In tables II-IV, number 14 has been encircled, since the reaction of this subject was different from the others appearing in the same column. If table II is consulted and case 18 located, it will be seen that in this case the extension synergy predominated to such an extent that extension was obtained both with "pull" and with "push."

TABLE IV

ASSOCIATED REACTIONS OF HEMIPLEGIC UPPER EXTREMITY
HEAD ROTATED TOWARD AFFECTED SIDE

Obtained in 23 patients in group of 26
Subjects 9, 13, and 20 had no demonstrable reactions

	MOTIONS OF NORMAL SIDE USED TO ELICIT ASSOCIATED REACTIONS							
	Resisted "pull"		Resisted "push"		Resisted plant. flex. of foot		Resisted dorsi-flex. of foot	
Reactions obtained on affected side	No. of cases	Subject identif.	No. of cases	Subject identif.	No. of cases	Subject identif.	No. of cases	Subject identif.
Undetermined reactions	seven	1,4,7, 11,15, 19,22	one	2	ten	1,4,7,12, 15,17,19, 21,22,24	ten	1,4,7, 12,15, 17,19, 21,22, 24
"Conflict"	three	3,25,26	one	22	zero		zero	
Entire flexion synergy or several of its components	eight	2,5,6,8, 10,12, 17,21	two	6, (14)	one	3	two	3,8
Entire extension synergy	two	23,26	eleven	3,4,5,7, 8,11,21, 23,24,25, 26	one	26	two	24,26
Partial ext. synergy; shoulder component, but no elbow component seen	four	(14) 15 18,24	seven	1,10,12, 15,17, 18,19	two	8,10	one	7

Similarly, in cases 6, 11, 23, 25, and 26 the flexion synergy definitely predominated and flexion was obtained both with "pull" and with "push." Case 14 thus was the only one in which a "pull" produced extension and "push" produced flexion.

The typical influence of the contralateral motion may be seen in a relatively isolated fashion in table II (head in neutral position). Many patients who responded by a flexion synergy with "pull" changed to extension when "push" was employed (1, 5, 10, 12, 21, and 24). In the subjects where flexion was obtained both with "pull" and with "push" (6, 11, 23, 25, and 26) the flexion synergy apparently predominated to such an extent that the effect of contralateral "push" was insufficient to produce extension. In these cases, if head positioning was added ("double reinforcement"), extension generally was produced.

SUMMARY

1. Twenty-six patients with hemiplegia were investigated for associated reactions. In all except 3 of these patients associated reactions were obtained.
2. Typical flexion and extension synergies, as described by Simons, were observed.
3. In the upper extremity, a flexion synergy was more easily elicited than an extension synergy.
4. Elbow flexion was found to be the strongest component of the flexion synergy; adduction and internal rotation of the shoulder the strongest components of the extension synergy.
5. An effect of the tonic neck reflex on the associated reaction was seen in most cases.
6. Observations of the effect of contralateral resisted motion on the associated reactions

revealed that in the upper extremity, with one exception, a "pull" facilitated a "pull" and a "push" facilitated a "push." (In the lower limb, in all cases tested, the effect was opposite: a "pull" facilitated extension and a "push" facilitated flexion.)

7. Knowledge and experience gained during this study is now being utilized for training patients with hemiplegia.

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*Effective Group Relations**

Milton Freedman, Ph.D.

All of us practice group relations with some effectiveness. Whenever a group of individuals works together to solve a common problem and progresses toward the solution, the members are practicing effective group relations. Our real concern, however, is how to improve the effectiveness of the groups with which we work. To do this we must first ask ourselves what is the direction of improvement, what are the goals of effective group relations?

One common goal is to have a more democratic group. Since, however, democracy means so many different things to so many different people, it might be well to seek more specific goals.

Another common goal is to make the group more efficient. But if we look to the results of what a group accomplishes, we are often dismayed to find that one individual could have achieved the results more efficiently.

I am not trying to say that we should not consider democracy and efficiency as goals, but I am saying that these common goals may not be the most helpful ones in improving group relations. It might be more helpful to think about the kind of relationship people develop as they work together in groups. One person may solve a particular problem quite satisfactorily, but this does not mean that he is able to solve every problem, nor that he can arrive at a better solution than other people with whom he works. The development of individuals and of a working group may well enable that group to solve the many problems which confront it daily in a much more efficient and democratic manner. Looking at it in another way, the main goal might be seen as developing people so that they are able to use their maximum resources toward the solutions of any problems with which they are confronted.

If we can accept the direction of improving group relations as freeing and developing the resources within individuals and helping them to use these resources effectively when working with others, then we are ready to turn to the *how* part of this job. How can we bring about these goals, and how can we know if what we are doing is helping to develop our groups?

SIGNPOSTS

Improvement in groups usually can be seen in a number of key areas. These areas may be considered the signposts or guides that can help

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you determine whether your group is making progress.

A signpost of prime significance is the climate, atmosphere, or *social feeling* that is present. Are the people in the group relaxed and comfortable? Does everyone feel free to talk and express his opinion, even when he knows there may be considerable disagreement? Do the people enjoy working together?

Another signpost is the group's *understanding* and acceptance of immediate and long range goals. Does everyone seem clear as to what he is trying to do in his work? Do the purposes make sense to everyone? Do the members of the group believe in the goals and are they meaningful to the group?

A third signpost might be called group *responsibility*. Do people feel responsible for what is going on or do they see only the responsibility of the leader or supervisor? Do people feel personally responsible if something goes wrong or do they think it is none of their business if they are not directly involved? Put in another way, is the job a group job or the responsibility of the supervisor?

A fourth signpost may be called group *development*. Are people given a chance to develop and use the abilities they have? Can improvement be seen in the way the group attacks its job? Do people really try to improve? Is there the feeling that we learn from our mistakes and do better in the future?

A fifth signpost is *resourcefulness*. How well is the group able to bring its resources to bear on a problem? Does the group ask for help when the resources in the group are insufficient, or do people pool ignorance, use answers that have not worked in the past, and show no initiative in getting help when help is needed?

A sixth signpost of group improvement is *flexibility*. Is the group really openminded? Are the people willing to try new ideas, and to change the usual way of doing things if someone has a better idea? Are they willing to start over and try a new approach when they find they are not doing well?

And the last point, are they *sensitive*? Are they aware of how other people feel? Do they realize how their words and their deeds affect others? Can they understand why people react as they do?

These are some of the key areas a group must consider in order to determine whether it is improving. The group that is making progress along these lines is well on the way to becoming an effective group.

Analysis of Leadership Technics

Knowing the areas for improvement is important for developing a group, but leaders want more help than this. They want to know the specific skills or technics that will enable them to lead their groups in the right direction. There are specific skills, but these cannot be used in the objective sense of the physical sciences. A mechanical approach to working with people does not take into account the individual personality, or the way each of us relates to other human beings. The way we have related successfully in the past is the key to how we will relate successfully in the future. This does not mean we cannot improve. We improve by incorporating ideas of others into our own personal way of doing things to the degree that the ideas make sense to us.

Any kind of leadership or participation that requires us to be a kind of mechanical robot and does not allow us to be our unique selves is doomed to failure. For that reason the technics that are often presented in discussions of group effectiveness must be cautiously considered. It is all right to be nondirective, for example, but little would be accomplished if all of us did nothing but use this technic. It is fine to use tests, blackboard talks and conferences but these are not the essence of improving your groups. Improvement can come not through the proficient use of a number of technics, but through the development of people as distinct entities and the way they relate to others. Technics can help, but they can hinder too, if the use of them becomes more important than the development of people.

Abuse of Skills

Perhaps even more dangerous than a mechanical approach to human relations is the misuse of skills. The person who works effectively to help improve his group can, if he so desires, use his skill to manipulate the group into doing what he personally wants. Manipulating groups to a predetermined answer when clumsily handled may be recognized as a dishonest attempt to prevent people from developing their own ideas and abilities in a democratic fashion. Manipulation in a skilled manner though equally dishonest, may not be seen for what it really is.

One form of manipulation that is particularly dangerous has been referred to as "groupthink." In the name of democracy and effective group relations people are pressured into conforming. Certainly it is important for groups to reach agreement on issues when unified action is neces-

sary. But this does not mean that it is necessary or desirable to stifle individuality and differences of opinion. On the contrary, improving group relations should mean encouraging people to express and develop what is uniquely theirs.

Another danger arises when a person who listens to speeches like this goes back to his job convinced that he can improve his group and solve all of the problems without any consideration of the total organization, the attitudes of superiors, the traditions and customs of behavior within the organization. Working with people must be realistic and it must be realistic within the framework of the total situation. The supervisor should be sure he has the cooperation of the administrator and he should recognize that improved group effectiveness will not solve a problem of low salaries or a need for two more full time people. He can improve the situation somewhat, but must have a realistic understanding of just what can be done within the existing framework.

Problems of Supervisors

We have been talking about the group as a unit. Let us turn our attention now to the supervisor who is often responsible for the success or failure of a group. Supervisors have many problems that complicate the attempts to improve their groups. Some of these problems they recognize; others they do not—although their subordinates may see these problems all too clearly.

For example, to the supervisor who sees himself as an excellent judge of how people should be handled there is no problem. Since the supervisor is generally the person who has had the most experience in working with people, he is confident that he is well qualified to determine how people should be treated. His subordinates may wish that he would be willing to learn from others some of the effective methods of group relations.

It is also not recognized by some supervisors that people can be changed. A supervisor may think that the shy girl who says so little will never be the poised person who can organize activities well. He believes that the man who talks too much and doesn't seem to realize what people think of him will never become a person with whom everyone wants to discuss personal problems. Some supervisors are convinced that people can't be changed, but we know that with the right kind of training and help, people can develop and become more positive, contributing members to the organization and the community. The average supervisor wonders why people cannot accept decisions of the organization. In one organization it was decided that vacations must be taken at a particular time. Employees resented this. Some of the women wanted their vacations at the same time as their husbands and they felt that they were mistreated. Supervisor Brown found himself faced with a disgruntled group and explanations seemed to get him nowhere. If he had talked to Supervisor Black in the same organization, he would have found that his employees had accepted the decision without anger. But Black used another method. The summer before he had told his employees about the problem that vacation schedules had caused. His employees had been informed on the thinking of the superiors and they had discussed it among themselves. When the decision was reached, they knew the thinking that had effected the decision. They were unhappy about the decision, but they understood why it had been made. Black was foresighted and had communicated the thinking over a year's time. Brown's explanation came after the decision had been made, when people were in no mood to accept a rational explanation.

Another difficult problem for the supervisor is the various pressures that are at work on him. This has often been called conflicting loyalties. It works something like this. The higher echelons look to the supervisor to carry out the work of the organization. They see his loyalty in his work as related to the organization. On the other hand, the workers look to the supervisor as the one who is supposed to be looking out for *their* interests, the person who represents *them* in the organization. As you all know, these two areas of interest often do not coincide, and it is the unusual supervisor who can satisfy everyone. Add to these his responsibilities to family, to the community, and his own ambitions, and the interests of all become even more difficult to satisfy. Pressures from unlimited sources is the daily lot of the supervisor. Too often the answer of the supervisor to this apparently insolvable problem is to give up the fight to satisfy others. He ceases to feel responsible to other loyalties. Sometimes he gives up his responsibilities to family or his own ambitions—and whatever he gives up makes him a poorer supervisor. To learn to live with conflicting demands and not give up is hard, but it seems to be the mark of a better supervisor.

Some supervisors have acquired characteristics which are self-handicapping in their relations to

their groups. Let me mention some of these characteristics:

The supervisor who thinks that everything should always function smoothly and who is never willing to recognize that problems and the solution of them are a part of working is the kind of supervisor who never recognizes a problem until it has reached such proportions that it is affecting the whole organization.

Then there is the supervisor who is always busy. He has no time for regular meetings in which people can exchange ideas and information. This supervisor finds that instead of a weekly regular meeting, he soon has daily emergency meetings.

There is the time conscious supervisor who thinks that democratic methods require too much time. He might as well dispense with meetings because he soon finds that he is doing all the talking and making all the decisions.

And there is the supervisor whose ideas of proper performance and of what the goals of his group should be are so far removed from everything his subordinates believe that they can never express to him what they really believe. All they can do is find out what he expects and try in his presence to accept these standards. Then the individuals express themselves in the absence of the supervisor.

SELF-EXAMINATION

These then are some of the problems we face. There are ways of improving groups and there are ways that supervisors can work more effectively with their groups. Self-examination is an initial attempt to improve group relations. You might ask yourselves these questions: What do the people I work with think of me? Am I the kind of person who is helpful to my people? Do they come to me with problems and do I help them in a way that is satisfying to them? In what areas am I weakest? Where do I need to improve? How much do I help to develop the people I work with? Do I give them authority as well as responsibility? If they make mistakes, do I see this as part of their development? Do I always think of my job in terms of the people I work with? Put in another way, you might ask yourselves these three questions: How do I work with my people now? Is this completely satisfactory? How might I improve?

Study after study has indicated that getting along with people is the most important single asset a supervisor must have. We have many opportunities every day to work in this area, to take stock, to see where we stand, to learn from each other. It is a wonderful opportunity and one that can bring benefit if we meet it with reality.

Every APTA member is urged to participate in the spring film drive

Through showings of the sound film

"WITHIN YOUR HANDS"

you can effectively present the advantages of a career in physical therapy to thousands of parents and students

Use your Chapter copy of the film (regular 17½-minute version) for showings to

school groups
PTA
church groups
health agencies, etc.
civic, fraternal and social organizations

Requisition the career material you'll need for those students, parents, and youth counselors who ask for more information on physical therapy.

Write to the National Office for a copy of the 14½-minute version of "WITHIN YOUR HANDS" for a TV preview or for a definitely scheduled showing on your local TV network.

DO YOUR SHARE
to make our film drive a national success

The Camp Counselor Looks at Physical Therapy

Elmer A. Gross, Ed.D., and Henry Goodwin, M.S.

Early history of camping movement

The development of the camping movement for crippled children in the United States has a relatively short but interesting history. The use of summer vacation homes for handicapped children during the latter half of the nineteenth century was one of the first of a chain of events which led to the establishment of modern camps for crippled children. Haxtun Cottage, opened in 1888 by the Children's Aid Society of New York City at Bath Beach, New York, was probably the earliest example of such a summer home. This large wooden building accommodated groups of sixteen girls between the ages of three and fifteen, and each group remained at the Cottage for a two-week period. The early development of the crippled children's camping movement was largely a growth in number of these summer homes and for the most part was confined, with few exceptions, to the Eastern part of the United States.

The first camp

The first real development in actual camping for crippled children came from Illinois and was a direct outgrowth of a school for crippled children. In January, 1899, the first public school for crippled children was started in Chicago. It was a one room school which was established to help the children from the Home for Destitute Children. There were nine children between the ages of six and sixteen enrolled for the first term. The children seemed to be contented during the school term, but during the summer they seemed to become restless and unhappy. Mrs. Emma Haskell, the instructor at this school, prevailed upon the Board of Education to furnish a vacation school for the children. The vacation school was followed by a two weeks' outing in the country which was paid for by the Chicago Bureau of Charities.

In the second year of operation of this public school for handicapped children, Mrs. Haskell decided to have a special camp for the children in the summer rather than a vacation school. A fund, secured through a group of friends, gave the children an outing in Michigan during July and August. The favorable results of this first camping experience inspired the promotion of a permanent camp for crippled children.*

Growth of camps from 1920 to 1946

There was very little further development in the crippled children's camping movement until after 1920. Records compiled by the National Society for Crippled Children and Adults (see Table 1) illustrate the growth of the crippled children's camping movement from 1920 through 1944 (Howett).

The war years between 1942 and 1946 with gasoline and food rationing had an adverse effect on the number of crippled children who were able to attend camps as well as on similar peripatetic activities. Although the war effort stinted the growth of the camping movement it was encouraging to note that even during this period the number of crippled children's camps remained almost constant.

Growth of camps since World War II

Since the termination of World War II there has been a rapid increase in the camping services offered to crippled children. In 1953 the summer camping programs sponsored by Easter Seal Societies alone offered service to some 6,000 crippled children. These services were offered through 50 resident camping programs and 53 day camps in 33 states.

Value of camping programs

Each camp may have specific objectives and these objectives may vary according to the particular camp; however, there is one broad objective common to all camps: *To provide for the development of the camper through happy, interesting, enriching, and meaningful experi-*

Dr. Elmer A. Gross, Associate Professor, Penn State University, University Park, Pennsylvania; Henry Goodwin, Teacher at Centre Hall High School, Centre Hall, Pennsylvania.

*See reference 1.

TABLE I

GROWTH OF CAMPS FOR CRIPPLED CHILDREN FROM 1920 THROUGH 1944 *

Year	Number of Camps	Number of Children
1920	5	200
1930	20	1000
1940	35	4200
1941	51	5000
1942	50	4700
1944	56	3500

* Harry Howett, *Camping for Crippled Children* (Elyria, Ohio: The National Society for Crippled Children and Adults, Inc., 1945), p. xii.

ences. There is not too much difference in a program offered at a camp for crippled children and a program offered at a camp for physically normal children; probably the major difference is the treatment program which is included in many camps for crippled children. The camps for handicapped children attempt to expose children to the same camping activities that are used in camps for normal children. The activities are modified to meet the handicapped campers' limitations and in many instances activities are selected for their therapeutic effect upon certain types of handicaps, but the main idea of participation to the fullest extent of one's abilities is emphasized. The selection of activities for children with various types of handicaps necessitates considerable thought and ingenuity on the part of the physical therapists and counselors.

Richards states that, "More than any other [experience], a camp environment with its varied stimuli elicits a natural desire upon the part of the child to overcome his physical limitations which hinder his complete participation in camp life." So we see that participation to the fullest extent of one's abilities in most of the camp activities has implications of furthering the child's treatment program in addition to satisfying the child's natural urge and desire to play.

Opposition to treatment in camping program

Treatment, especially physical therapy, has been included in most of the camping programs for crippled children ever since the origin of the camping movement at the turn of the century. In some instances, however, it was not a part of the crippled children's camping program and met with resistance in various parts of the country. For example, as late as 1934 there was still some opposition to physical therapy in camping programs as evidenced by the complaints of the doctors in the neighborhood of Camp Cheerful, which was located at Fire Island, New York. The doctors did emphasize, however, that there were great benefits to be derived by the campers from salt water bathing. Many of the day camping programs for crippled children today do not include treatment because the campers are present only for several hours each day and return home each night. Resident camping programs of two or three weeks' duration may not include the services of a physical therapist because the child establishes residence at the camp for such a short time that a program would hardly get started before the camp session would be over.

For many years when one mentioned therapy, the reference was made solely to physical therapy. Since World War II some camps have expanded their staffs to include speech and occupational therapists. The emphasis in the camping programs, as well as in the educational system, seems to be geared to treating or ministering to the needs and interests of the *whole* child. It is with the physical therapy program, however, and the counselors' role in this program that the rest of this article will be concerned.

Pre-camp training conference

Many camps for crippled chidren have a pre-camp staff training conference a few days prior to opening camp. During this time all the camp staff meet and discuss plans for the coming season. The members of the staff will vary at the individual camps, but usually a camp staff includes: a camp director, therapists, one counselor for each group of four children, one staff member who is Boys' Director and Program Director,

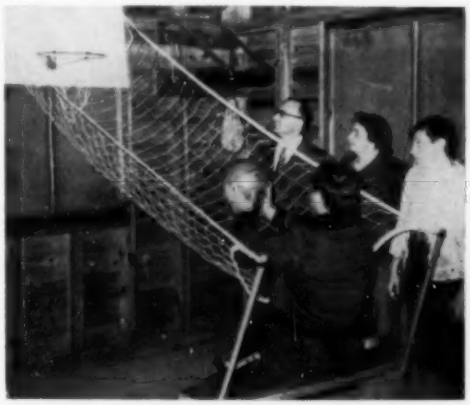

Figure 1. Adapting an activity to the camper's capabilities.

Figure 2. Campers receiving group speech therapy.

a Girls' Director, a nurse, a dietician, a secretary, cooks, dining room helpers, and a maintenance man.

The new staff members are introduced to the rest of the staff and are oriented to the camp and its objectives. The physical therapist is given the opportunity to make certain that the staff is aware of the objectives of the camp's physical therapy program which, in general, are: (1) to integrate physical therapy in the camping program in such a way that the campers continue to have happy, interesting, and meaningful experiences, and (2) to continue the physical treatment of the camper so that he will develop more independence. The physical therapists are usually given sufficient time to discuss with other staff members the physical problems that may be encountered among the campers, such as cerebral palsy and poliomyelitis. Some of the problems which may require explanation include bracing problems, feeding problems and behavior problems related to each of the major types of disability. The physical therapist may also give an explanation-demonstration of methods of handling children—lifting, turning, raising from the ground, crutch technics, getting in and out of wheel chairs, and other information the counselors will need to better understand the child and to prevent any needless injury or strain to the camper or themselves. The physical therapist also may suggest ways through which the counselors may augment treatment which is received by the camper. Through willing cooperation between the physical therapist and the counselor, the child can receive the maximum benefit of the program throughout every day he is in camp.

Types of equipment

Without becoming too technical, the physical therapist should see that the counselors become acquainted with the types of equipment being used in the treatment program. In general, the type and amount of equipment necessary for an adequate program will depend on the size of the camp, the number of children to receive treatment, the types of handicaps, and the availability of electricity. The equipment is generally constructed so that it can be used either indoors or outdoors. The following equipment can generally be found in most physical therapy departments at camp: adjustable parallel bars, standing tables (single, double or group), child-size tables and chairs, treatment tables, a set of steps, walking skis, full length mirrors, floor mats, sand bags, crutches, canes, extra shoes and braces for emergency use, rain gear, various toys and sports equipment, some basic tools for simple brace repairs, supplies of crutch tips of various sizes, and a shoe lace tipper set.

Physical therapy program

In the early days of camp the counselor should visit the physical therapy building while his campers are receiving treatment and in this way become acquainted with the activities and treatment employed by the physical therapist.

The procedures and technics used in any physical therapy program vary with the nature of the handicap being treated and the training of the physical therapist; nevertheless, the following procedures are outlined as being typical of the activities in a physical therapy program at a camp for crippled children.

Table work: for muscle reeducation, strengthening, testing, stretching, and relaxing;

Mat work: for general conditioning exercises;

Locomotion activities: crutch walking, gait training, independent walking on the grass, roads, concrete walks, and in buildings—training in going up and down steps;

Functional work: to be carried out at all times. The children can be given instruction in how to dress and undress while they are actually engaged in these activities; sitting position can be corrected at the table and during the day; walking on crutches may be practiced going to and from an activity; and counselors will aid in instructing campers how to get up when they fall (Schleichkorn).

Most camps for crippled children have a swimming program. It is at the pool that the physical therapist can adapt activities which are appealing and of great therapeutic value. Some of the more severely handicapped campers may receive treatment in the pool instead of at the physical therapy building.

Counselors welcome advice

The physical therapist can get an idea of what is being done by the counselors and campers by entering into the camp activity program as much as possible and by trying to visit different cabin groups at dressing and undressing time to give the counselors additional advice on different technics of handling children with various disabilities. In the dining hall the physical therapist may visit different tables during the meals to suggest to the counselors more effective ways of feeding the children under their care. If there is not an occupational therapist in camp, the physical therapist accepts the responsibility for recommending seating plans in the dining hall so that the children who need special care and attention will be conveniently located.

The counselors need and appreciate suggestions the physical therapist may offer in regard to improving their technics in handling the children in their care, and in the final analysis, the children receive the benefits of this cooperation. The physical therapist must never lose sight of the valuable work the counselors can perform in helping the campers. Actually physical therapy is being performed in almost all phases of camp living and the activity program. The more the physical therapist actively participates in the various phases of the camp program, the more thorough will be his work and the more confidence the staff and children will have in him.

Counselors can help perform incidental tasks

The camp physical therapist needs and frequently seeks the aid of the counselors in performing many of the tasks that are so important to the campers' welfare but take time away from the treatment program. Some of these duties in which the counselor may help are: checking the campers' braces for loose screws, checking to see that the braces are not causing abrasions, checking shoes for excessive wear or faulty construction, taking shoes that need repair to the physical therapist so that he may send them to the shoe repair man (Camp Daddy Allen in Pennsylvania has an annual shoe repair bill of over $200 for an eight-week camping season), check to see that the laces have tips, oil the braces regularly, and watch for signs of the camper outgrowing his braces. Even though the physical therapist may solicit and get the aid of the staff in checking these minor details, the final responsibility for seeing that these infinite details are being done remains with him.

Figure 3. Learning to walk.

Cooperation is important

The major objectives of camps for crippled children that have a treatment program are best reached by complete cooperation between the therapists and counselors. It is this combination of skillful, intelligent therapists, and well-informed, cooperative counselors that imparts most to the development of campers so that they may eventually become contributing members of society.

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Suggestions from the Field

Facial Support

Dorothea M. Lawrence
Major, USAF (MSpC)

Braces or supports to prevent sagging and stretching of the affected muscles of the patient with facial palsy has long been a problem as well as a challenge to the ingenuity of the physical therapist. Many devices have been used such as adhesive tape, scotch tape, a skull cap and head bands with wire hooks and traction attached to them.

Due to the increased number of Bell's palsy cases being referred to the Air Force clinic for treatment in the past two years, the need for a more sanitary, more comfortable, more easily adjustable and more cosmetic support has become apparent.

With the help of the Occupational Therapy Department we are now using the plastic support as shown in figure 1. Each patient is individually fitted as he would be for any prosthetic device.

Chief Physical Therapist, Lackland Air Force Base, San Antonio, Texas.

Figure 1.

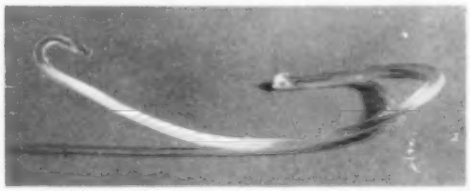

Figure 2.

The support is made of a thin strip of clear plastic 1/8" thick, and 1/4" wide. The plastic is heated and the ear hook is shaped to fit as the bow of eye glasses would be fitted. The mouth hook is made just long enough to assure comfort and security. In order to permit complete closing of the mouth the shaft is notched slightly where it contacts the corner of the mouth. The end of the mouth hook should be made slightly wider to fit against the inside of the cheek (Figure 2).

The shaft can be adjusted to give the proper tension either in a straight position or curved upward toward the temporal bone. The sharp edges of the plastic should be sanded down to prevent cutting of the mouth, cheek, and ear. Added comfort can be obtained by slipping a short length of rubber tubing over the mouth and ear hooks.

The patients find this type of support much more comfortable and convenient as it is easily removed for eating and shaving, and irritation of the skin by removing and replacing tape splints is eliminated.

The plastic facial support is easily washed and may be readjusted by merely reheating and reshaping. As the tone returns to the facial muscles the support may have to be shortened. The adjustments are made by re-forming the ear hook and cutting off excess length. If clear plastic is used it is almost undetectable when worn.

Women patients are more tolerant of the plastic facial support because of the cosmetic effect as demonstrated in figure 1.

Rehabilitation Impeded by Personnel Shortage

A nationwide shortage of trained workers is preventing the benefits of modern rehabilitation from reaching vast numbers of the nation's disabled. This was one of the conclusions in a report released in February by the Health Resources Advisory Committee of the Office of Defense Mobilization.

The report, prepared by a special subcommittee, asserted that although the number of such personnel had increased substantially in recent years, the number today is still not sufficient to meet present national needs or expected future needs. Nor, the report said, does our present national supply of such personnel and our present level of training such personnel constitute an adequate mobilization base to meet the increased needs which would result from possible casualties in the event of a national disaster.

The report estimated the national supply of physical therapists at 7,300 and a need of approximately 12,500 and the national supply of occupational therapists at 3,700 as compared to a need of approximately 9,500. To meet the nation's needs for medical and psychiatric social workers, the report said, would require graduation of 800 to 1,000 new medical social workers and 1,000 new psychiatric social workers each year. It added that no adequate estimate could be made at this time of the national need for clinical and counseling psychologists, speech and hearing therapists, and rehabilitation counselors, but the need now far outstrips the supply.

Despite these serious shortages of specialized rehabilitation personnel, the report said that through its current programs the federal government had adequate mechanisms to meet its responsibility for assisting in increasing the national supply of such personnel and added that no new federal legislation for this purpose was needed at this time.

The major federal programs to aid in the recruitment and training of such personnel are those operated by the Public Health Service and the Office of Vocational Rehabilitation, Department of Health, Education and Welfare. The report indicates that further federal support designed to increase the national supply of such personnel should come through increasing the funds available to the Public Health Service and Office of Vocational Rehabilitation to expand existing programs.

Howard A. Rusk, M.D. is Chairman of the Health Resources Advisory Committee and Eugene J. Taylor served as Chairman of the special subcommittee reporting. Catherine Worthingham, Ph.D. was also a member of this subcommittee and is the author of the chapter on physical therapy. The excerpts from this chapter are reprinted for the information of our readers. Copies of the full report may be obtained from the Health Resources Advisory Committee, Office of Defense Mobilization, Room 111, Executive Office Building, Washington, D.C.

PHYSICAL THERAPY

The shortage of qualified personnel in physical therapy is critical, as exemplified by the fact that there is not even one physical therapist per hospital in the United States, not to mention the need in other institutions and agencies. There is much concern over the shortage of professional nurses with a supply of 389,600 and an immediate need for an additional 50,000, a 12 per cent increase. In physical therapy, as in the other groups with which this report is concerned, there is an immediate need for additional physical therapists. An increase of 4,480, or 65 per cent, would be required to take care of this shortage.

Group Covered

This chapter is concerned with professional physical therapists only, although it is recognized that physical therapists should have the assistance of nonprofessional personnel in carrying out those responsibilities for patient care for which their professional knowledge and skills are not required.

The physical therapist treats disease and injury by physical means such as heat, light, water, electricity, massage, and therapeutic exercise (including physical rehabilitation procedures such as gait training and instruction in other functional activities) and carries out treatment procedures only upon the prescription of a physician, who may be a general practitioner or a specialist in any of the recognized fields of medicine. In a broader sense a physical therapist is a teacher, not only of the patient but of the relatives or others who are to assist the patient to carry out specific treatment procedures such as muscle re-education, the use of prosthetic devices, or other treatment in the home.

Supply and Need for Physical Therapists

In 1951 there were 5,300 active physical therapists and about 1,900 vacancies in hospitals. On the basis of present graduation rates (of 600 a year) and an attrition of 7 per cent, it is estimated that there will be about 7,800 active

physical therapists by 1956. Because of the increased utilization of physical therapy and the increase in hospital beds, the 1951 need of 7,200 will probably increase to approximately 11,300 by 1956. This would mean about 3,500 vacancies. If allowance is made for needs other than hospitals, the total need in 1956 would be 13,600. In comparison with the estimated supply of 7,800, there would be a gap of 5,800 unfilled positions.

These estimates of projected need may be low judging by the American Hospital Association report on physical therapists employed in hospitals in 1954. Out of 5,417 hospitals reporting, 1,991 indicated that they had physical therapists in their employ. The total for the group was 5,302 of which only 3,244 were registered. It is probable that at least the majority of the remainder are not qualified physical therapists. The estimated number of qualified physical therapists for 1954 was 6,800. Only 3,244 of these, or 47 per cent, were employed in hospitals. This indicates an immediate additional need for 2,058 qualified physical therapists for established positions in hospitals.

The fact that 55 per cent of the qualified physical therapists in the study made by the American Physical Therapy Association in 1952 were employed in hospitals, increases the possibility that the 2,058 nonregistered physical therapists in hospitals, mentioned above, are not qualified.

Distribution of Physical Therapists

Physical therapists are not evenly distributed throughout the country. New England, the Middle Atlantic States, the Mountain States, and the Pacific States have more physical therapists than would be expected on the basis of population. The four States in the East South Central division have the lowest ratio of physical therapists to population.

Where senior class capacity in the schools training physical therapists is related to population, the picture is somewhat different. The Mountain division with a more than average supply of physical therapists has a very small training capacity. On the other hand, the training capacity in the West North Central division is almost twice the national average but the supply in that division is slightly below average. There are no training facilities in the division with the lowest supply, the East South Central.

As would be expected, a large proportion (33 per cent)of the physical therapists employed in hospitals are in the largest hospitals. Almost 75 per cent are in general hospitals. Over half are in nonprofit hospitals; almost one-fourth in hospitals operated by the federal government.

Education of Physical Therapists

Professional physical therapists are those who are graduated from schools of physical therapy approved by the Council on Medical Education and Hospitals of the American Medical Association.

It should be noted that the number of approved schools for training physical therapists has increased from 13 in 1936 to 34 in 1954. In that same period, the capacity of the senior class and certificate course has increased from 138 to 1,050. The number of graduates in 1941 was 238, while the estimate for 1956 is 700. Since 1952 the schools have been operating at about two-thirds capacity. One new school at the University of Oklahoma was approved in 1955 and has a senior class capacity of 16.

Both certificate and bachelor's degree programs are offered. The trend is toward the degree program as is evidenced by the increase from 7 out of 32 schools offering a degree in 1945, as compared with 26 out of 34 schools in 1954. In addition, two schools now require a degree for entrance into a certificate program. Also the newly approved school at the University of Oklahoma offers a degree program. The certificate courses vary in length from 12 to 34 months depending upon the prerequisite level of education. It should be mentioned also that the degree courses are for the most part associated with, but not necessarily under the direct administration of a medical school.

Voluntary and Federal Agency Programs for Increasing the Supply of Physical Therapists

1. Voluntary agencies

The American Physical Therapy Association listed sources of scholarship aid to students in an attractive brochure entitled "Sources of Financial Assistance for Physical Therapy Students 1954" which was distributed widely to prospective students. Although the number of listings was large, many awards were for small sums and were limited to one or two individuals. The publication had the indirect result of interesting additional organizations in the problem as evidenced by the larger number of participants in the 1955 edition.

The Arthritis and Rheumatism Foundation

and *The Muscular Dystrophy Associations of America* have stated that although at present they have no funds allocated to the training of paramedical personnel they hope to budget funds for this purpose in the near future.

The National Foundation for Infantile Paralysis has offered scholarships for the basic education of physical therapists since 1942 and fellowships to prepare teachers for the physical therapy schools since 1945. As of June 30, 1955, 2,185 complete or partial scholarships had been awarded under authorized funds totaling approximately $3,005,500.00. Forty-nine teaching fellowships of one to three years duration had also been awarded under authorized funds totaling $102,000.00.

The National Foundation has also assisted (or is assisting) 13 physical therapy schools for periods of 1 to 13 years from funds totaling approximately $706,600.00. The American Physical Therapy Association has also received funds totaling $437,219.00 since 1943 for the maintenance and improvement of standards of education and practice and recruitment of students.

The National Society for Crippled Children and Adults currently offers scholarships up to $500.00 for the completion of the final year of physical therapy training under funds provided by the Kappa Delta Phi Sorority. Some 30 of the affiliated state and local societies also offer scholarships for this purpose of from $100.00 to $500.00. The National Society also cooperates with the American Physical Therapy Association and other agencies in stimulating student recruitment.

United Cerebral Palsy has made two grants of $15,000.00 (1954-55) and $10,000.00 (1955-56) respectively to the American Physical Therapy Association for undergraduate scholarships in physical therapy. Thirty-three awards were made from the 1954-55 funds.

2. Federal agencies

Department of the Army

The Department of the Army conducts an approved Physical Therapy Course at the Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas. The students are commissioned and attend the school on active duty. The average enrollment is 25 students per class for a 49-weeks' training course. The need of the service for physical therapists is met, for the most part, by the graduates of this course.

Department of the Navy

The Navy has a Student-Intern program in which the students are given the pay and allowances of an ensign with the exception of travel allowances. Four physical therapy Student-Interns completed their training in September, 1955.

Department of the Air Force

The plan for student training in the Air Force is to commission qualified applicants in the reserve and assign them to physical therapy schools on an active duty status to complete their last year of professional training. The officer is entitled to receive the normal compensation and benefits of a second lieutenant, but pays her own tuition and expenses.

As of May 31, 1955 there were six trainees in physical therapy under this program and three trainees awaiting appointment.

Public Health Service, Department of Health, Education and Welfare

There is a provision for the training of physical therapists by state agencies and local health departments in the program of grants to states of the Public Health Service and the Children's Bureau. Two physical therapists have been trained under this program since 1954. Information on such training prior to 1954 is not available.

Student affiliation for clinical training of physical therapists is provided in six U. S. Public Health Service facilities.

Veterans Administration

There are 26 approved schools of physical therapy affiliated with 43 VA hospitals and outpatient clinics for clinical training of students. Trainees must be candidates for a certificate, B.S. or M.S. degree in physical therapy and be selected and recommended by one of the affiliated approved schools.

Trainees spend a minimum of three weeks and a maximum of eight weeks in the program. Of the 40 hours of work each week, 15 hours are spent in attending lectures, demonstrations, and interviews and 25 hours in performing clinical services.

A total of 306 trainees were employed in fiscal year 1954 and 325 in fiscal year 1955. Of the 306 trainees completing training in fiscal year 1954, approximately 20 per cent accepted employment with the VA.

There is no cost involved to the VA in this program except where quarters and subsistence may be furnished as trainees are appointed without compensation. The VA reports this program could be greatly expanded in the event of need.

Office of Vocational Rehabilitation, Department of Health, Education and Welfare

During 1954-55, traineeships in physical therapy were limited to faculty members of the physical therapy schools for short-term training or courses in rehabilitation procedures, or for short periods of clinical practice in rehabilitation facilities. Stipends ranged from $100.00 per week to a maximum of $600.00 for this program.

Eight approved schools of physical therapy received federal assistance totaling $36,635.00 in 1954.

Requirements for Increasing the Number of Qualified Physical Therapists

There is no single panacea for personnel shortages in the physical therapy field.

In order to solve personnel needs, adequate funds are required to assist professional organizations in recruiting students, and in maintaining and improving standards of education and service in the physical therapy field.

Additional funds will be needed to help finance basic training for students with limited budgets. Teaching fellowships are required to encourage well qualified therapists to prepare themselves for the teaching field. Present salary scales in the field give the physical therapist little opportunity to finance graduate education.

Financial aid will be needed to assist schools in expanding current programs. Maximum expansion will require: 1) additional personnel including physical therapy instructors, physical therapy supervisors for clinical practice, and probably basic science instructors; 2) space to accommodate larger classes; and 3) more teaching equipment and supplies.

Maximum capacity in the existing schools will not solve the shortage in the physical therapy field. It is evident from the projected need for physical therapists per year that more schools, as well as the expansion of established schools, will be required if these needs are met.

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On the Metabolism of Normal and Denervated Sympathetic Ganglion Cells. W. L. M. Perry and H. Reinert, J. Physiol., 130:156-166, October 1955

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(Continued on page 264)

Editorial

In this and the March issue of the *Review* you have been introduced to those persons who have been nominated for election in June to national offices. Very shortly, then, you will have the privilege and duty at your chapter meeting to make your individual decision regarding these candidates. Such a decision should not be made lightly but requires, for the total expansion of your profession, a careful analysis.

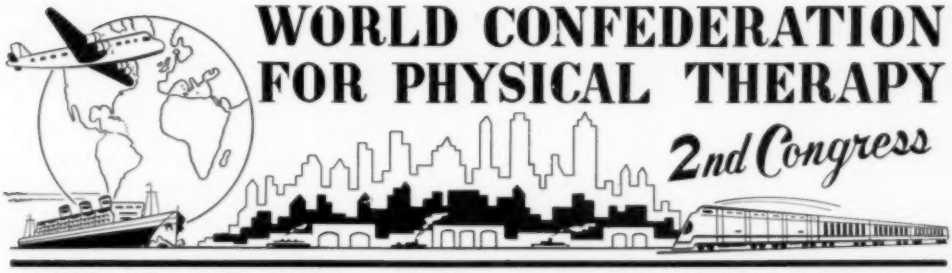
Basically what are the criteria upon which this important selection should be made? Certainly this must not be a popularity contest, but rather a studied decision based on facts and known objectives. Knowledge of these facts and objectives then becomes the responsibility of every member if the final selection is to be realistic.

Your national Bylaws provide basic qualifications and a list of duties for national officers. It is important that each member review these during the process of reaching his decision. Only by these and the merits listed by the Nominations Committee will a considered aggregate opinion be reached. This review of practical considerations also results in another important selective device. This is the ability to choose the person for the job and not in relation to any other job he may have held. Each position on the Board of Directors requires specific skills and it is important that the final choice be in relation to these skills. Your Nominations Committee makes every effort to provide for this, but the final selection must still be that of the individual member.

It is often said that some of these nominees are known only locally and that a certain amount of guess work must result from remote geographical areas. This is not completely true. Few, if any, unknown persons are nominated for a national office since their very selection frequently results from professional activity at a wide level. It is most often true that all of them are known by some local chapter members and that each voter has a responsibility to seek this information. Eventual decision must be a thoughtful process and such seeking for facts is imperative.

Every member must take an individual interest in selecting his national officers. It must not be an executive committee selection followed by a "rubber stamp" ratification by the chapter. It is sincerely felt that this happens only rarely—but it does occur.

Will you, therefore, as a member of your chapter reflect on this decision? By making an effort to gain information about each candidate and by evaluating his potential contribution, each member can be and must be an *active* member.



WORLD CONFEDERATION FOR PHYSICAL THERAPY

2nd Congress

JUNE 17—23, 1956 · HOTEL STATLER · NEW YORK, N.Y.

New York in any month is exciting and gay but, in June 1956, it is "extra special" and not to be missed—with a world meeting of physical therapists!

Advance Enrollments

As of March 1 advance enrollments are 1,049. This includes 107 from Canada and 147 from other countries. You still have until May 1 to save $2.00 on your enrollment. Even if you can not be sure until the last minute whether you can get the time to come *do not hesitate* to enroll. We will have a Housing Bureau at the Statler to help you with accommodations. The "buyers" who usually are in New York that week in June are coming in May which helps us a lot.

Students

We have recently heard that there will be student representation from as far away as Northwestern and Wisconsin. Plans will be made for a student "get together."

Post Congress Tours

A number of our colleagues from overseas have taken advantage of this unusual opportunity. Special plans are being made by Eastern Pennsylvania District, the District of Columbia and Massachusetts Chapters to receive those taking the tours.

Pre and Post Congress Visits in the New York Area.

The Greater New York District is compiling a list of departments which will be open and ready for visitors before and after the Congress. It is asked that you do not visit departments during the week of the Congress. All will be on a reduced program so as to permit as many staff members to attend the Congress as possible. This is a request that is made annually and compliance is always deeply appreciated by the *hostess* chapter.

Exhibits

Both the technical and scientific exhibits will be larger and more interesting than ever before. A full listing will be in the June *Review*. This will be your opportunity to see the latest in equipment and research. The exhibit area will be immediately adjacent to the Ballroom for your convenience.

Boat Trip and Banquet

Purchase of tickets in advance will be of great help. You will not wish to miss these two events.

New Endorsing Organization

American College of Physicians

Seats on Charter Plane

There are still three seats available on the charter plane for London following the Second Congress. The fare is substantially lower than regular fare. For information write to Miss M. J. Neilson, Secretary, Chartered Society of Physiotherapy, Tavistock House (South), Tavistock Square, London W. C. 1, England.

Chapter Contributions

A list of chapters and districts which have contributed to the Second Congress is given in percentages. The amount is equivalent to a dollar per member and 100 per cent is based on the number of active and inactive members listed in the National Office as of March 1. It is our hope that before May 1, all chapters and districts will have contributed at least 100 per cent. Georgia, to date, leads all with a great big 226 per cent. Seventeen other chapters and districts are in the 100 per cent or over class.

Percentage of Chapter Contributions to March 1

Chapter	*Per cent*
Alabama	52
Arkansas	137
California	
San Diego	33
San Joaquin Valley	81
Santa Barbara	85
Southern California	170
Colorado	70
Connecticut	101
Delaware	107
District of Columbia	151
Georgia	226
Hawaii	69
Illinois	113
Indiana	86
Northern Indiana District	37
Kansas	
Northeastern Kansas District	64
Louisiana	58
Maine	54
Maryland	22
Massachusetts	145
Western Massachusetts District	30
Michigan	
Western Michigan District	100
Missouri	
Eastern Missouri	105
Western Missouri	84
Nevada	58
New Hampshire	71
New Jersey	
Southern New Jersey District — $10.00 (Number of members not yet determined)	
New Mexico	64
New York	
Western New York District	85
North Carolina	101
Ohio	
Central Ohio District	100
Northeastern Ohio District	90
Southwestern Ohio District	81
West Central Ohio District	40
Oregon	
Northern Oregon District	100
Southern Oregon District	152
Pennsylvania	
Central Pennsylvania District	93
Eastern Pennsylvania District	108
Western Pennsylvania District	118
South Carolina	100
Tennessee	
Middle Tennessee District	73
Texas	59
Vermont	46
Virginia	24
Wyoming	100

Council of International Organizations Interested in the Handicapped

At a meeting of the Council of International Organizations Interested in the Handicapped (CIOIH) which met at United Nations, March 13 and 14, the World Confederation for Physical Therapy was represented by its President, Mildred Elson. Miss Elson is also a member of the Executive Committee of CIOIH. The Council is composed of nongovernmental organizations concerned with all handicapped, whether due to physical or mental disability, blindness or deafness. It receives reports from United Nations' agencies of current and proposed programs in rehabilitation and acts to support those programs through organizations specifically concerned.

The World Confederation for Physical Therapy presented the following statement on its activities in the field of rehabilitation:

All activities of the World Confederation for Physical Therapy are directly or indirectly concerned with the rehabilitation of the physically disabled since physical therapy is an essential element of a rehabilitation program. The Confederation is well aware that there is a world-wide shortage of physical therapists. All affiliates therefore have been urged to make every effort to increase the supply, not only to meet their own needs but to be able to share physical therapists to staff new programs, both for service and for teaching. Affiliates also have been urged to seek opportunities to interpret the need for and importance of rehabilitation. Physical therapists, it was felt, because of their professional training and because as a group they are crusaders, pioneers, and humanitarians are uniquely qualified to support voluntary and governmental efforts to broaden services for the disabled.

Communication

The increase in communication between physical therapists individually and their societies has been a logical but significant achievement. In five years barriers of language, distance, and nationalism have been greatly overcome. All affiliates exchange journals. The World Confederation for Physical Therapy issues a quarterly news bulletin, informal in style. All national journals are devoting an increasing amount of space to activities of other international agencies. There has been a marked increase in the travel of physical therapists for professional visits among affiliates. Reports show that this has resulted not only in better professional understanding but cultural understanding as well.

Foreign Service

A recent incomplete survey of member societies reveals that in the last three years physical therapists under such sponsorship as religious groups, national governments, United Nations and International Voluntary Agencies have given service

on a short (consultant) or long term basis in India, Burma, Korea, Pakistan, Ceylon, Brazil, Venezuela, Mexico, Guatemala, Haiti, Costa Rica, Egypt, Lebanon, Israel, French West and French Equatorial Africa, Kenya, Uganda, New Guinea, New Britian, Indonesia, Nigeria, Malta, Liberia, Italy, Greece, and Austria. The World Confederation for Physical Therapy is compiling a register of physical therapists available for foreign service to assist agencies within the United Nations to obtain personnel. Through its President in the United States and the Honorable Secretary in London consultation and guidance have been possible in person and by correspondence with physicians and representatives of governments on equipment, teaching programs, and treatment methods.

International Meetings

Although limited by funds the World Confederation for Physical Therapy has had official representation at the Third International Poliomyelitis Conference, the Sixth World Congress of the International Society for the Welfare of Cripples, the Conference of World Organizations Interested in the Handicapped in Geneva and New York by members of its Executive Committee.

World Confederation for Physical Therapy Congresses

In the five years since its founding the Confederation has held one Congress in London attended by over 1,600 physical therapists and other professional workers from 26 countries. The Second World Congress will be held in New York, June 1956, and an even greater attendance is anticipated.

Through scientific papers, exhibits, films and the opportunity for individual discussion there is a sharing of knowledge, new concepts and technics of treatment, further development of older and sound concepts, reemphasis of philosophy, professional responsibilities, and cooperation with other professional workers so that the needs of the disabled patient may be met. In addition the host of the Congress, the American Physical Therapy Association, has arranged for short educational courses to be held before and after the meeting in hospitals and universities on upper extremity amputations, cerebral palsy, and advanced rehabilitation technics. Additional opportunities for traineeships of six to twelve months have been provided.

The work of the World Confederation for Physical Therapy is carried on voluntarily by its Executive Committee and Honorable Secretary in addition to their regular duties. In spite of the fact that there is no one person able to spend full time in gaining objectives it is felt real progress has been made. The Confederation is growing, from 11 in 1951 to 12 in 1953. Three new member organizations will be confirmed in 1956 and applications from three others have been received. Through exchange of professional journals, the Confederation's quarterly bulletin, International Congresses, and the flow of visiting physical therapists from one country to another a unity of purpose and work towards a common goal, namely greater service to the disabled patient wherever he may be, has been well started.

Physical Therapists in Official Crippled Children's Programs and Public Health

Physical therapists working in the Crippled Children's Service, as well as all those working in the public health field, will meet on Saturday morning, June 23, at 9:00 o'clock, in the Keystone Room at the Statler Hotel.

Mrs. Rudie Agersnap, Copenhagen, Denmark, an officer of the World Confederation for Physical Therapy and former Secretary of Danske Fysioterapeuter, will discuss "Home Care Programs in Denmark."

Miss Phyllis Carleton, Physiotherapist, The Canadian Arthritis and Rheumatism Society, Toronto, Canada, will speak about a new community program in the Belleville Branch of their organization.

Miss Clara Arrington, Consultant in Physical Therapy, U. S. Children's Bureau, Department of Health, Education and Welfare, Washington, D. C. will discuss "What Does the Changing Picture in Crippled Children's Programs Mean to Physical Therapists?"

A short business meeting will be held at the close of the formal presentations for APTA members working in public health. The formation of a Public Health Section is under consideration. There must be a minimum of fifty members to have a section approved.

Co-Chairmen

MARIAN H. PRATT
Consultant Public Health Nurse
Physical Therapy
New York State Department of Health

SARAH C. JOHNSON
Physical Therapy Supervisor
Division of Crippled Children
Connecticut Department of Health

Speakers at Second Congress

EDNA M. BLUMENTHAL, Director of Rehabilitation, North Carolina Cerebral Palsy Hospital, Durham, North Carolina, is a graduate of the University of Cincinnati and completed her physical therapy education at Walter Reed Hospital, Washington, D.C. Miss Blumenthal was chief physical therapist, Cerebral Palsy Unit, State Hospital for Crippled Children, Elizabethtown, Pennsylvania, prior to her present position and in the past was a member of the physical therapy staff of the Children's Rehabilitation Institute for Cerebral Palsy Cases, Baltimore, Maryland. Miss Blumenthal is an Associate Member of the Association of Occupational Therapists of England and was a participant at the annual meeting of that organization in 1943. She is the author of several articles relating to the subject of cerebral palsy. Miss Blumenthal will discuss "Cerebral Palsy—Similarities and Differences in Methods of Treatment."

GEORGES DREANO is Kinesitherapist attached to the Paris Center of the National School of Improvement (Ecole Nationale de Perfectionnement) and is associated with various hospitals in Paris. He received his physical therapy training at the French School of Orthopedics and Massage and later studied at the Royal Institute of Gymnastics in Stockholm, Sweden. For a number of years Mr. Dreano has studied the factor of flexibility in relation to posture. He is the author of several articles on this subject including "Examination for Measurement of Flexibility." Mr. Dreano will present "Stiffness and Flexibility" during the Second Congress.

EARL L. KOOS, PH.D., (Columbia University, 1945) is Professor, Family Life Education, School of Social Welfare, Florida State University, Tallahassee, Florida, and has contributed to research on family life problems related to illness in the family. His work has been supported by grants from the Macy Foundation, the Commonwealth Fund, and the National Institutes of Health. In 1954 Dr. Koos received the Lemuel Shattuck award for distinguished writing in the field of health. He is the author of numerous articles on his specialty which have been published in health and nursing journals. Dr. Koos will present "The Patient as a Person" at the session on "The Community Rehabilitation Program."

EDITH BUCHWALD LAWTON, is Director of Rehabilitation Courses for Physical Therapists and Instructor, Physical Therapy Curriculum, School of Education, New York University. She also received her physical therapy education and the Master of Arts Degree at New York University. Mrs. Lawton assisted with the organization of the Paraplegia Units at Cushing Army Hospital and McGuire Army Hospital. She was formerly a staff physical therapist at the Institute for the Crippled and Disabled, New York, and became interested in the development of Activities of Daily Living testing. She is an associate author of "Physical Rehabilitation for Daily Living" and has contributed articles on the subject of functional training. Mrs. Lawton's topic on the Congress program will be "Functional Testing: Development and Current Use."

EARL A. LEWIS, Assistant Engineering Scientist, New York University, College of Engineering, will be the physical therapist participant in the panel discussion: Prosthetics—Research and Developmental Aspects and Training. Mr. Lewis is a Brooklyn College graduate and received a certificate in Physical Therapy at Stanford University in 1951. He attended the special courses on prosthetics at the University of California, Berkeley and Los Angeles.

EUGENE F. MURPHY, PH.D. (Illinois Institute of Technology, 1948) is Chief, Research and Development Division, Prosthetic and Sensory Aids Service, Veterans Administration, New York. He has been active in the artificial limb research program since 1945, having served as staff engineer on the Committee on Artificial Limbs of the National Research Council from 1945 to 1948. Since 1948 Dr. Murphy has been chief of all research and development on prosthetics in the Veterans Administration. Dr. Murphy has contributed to many scientific and technical meetings and is the author of numerous articles relating to the subject of prosthetics. During the Second Congress he will contribute to the Symposium: Prosthetics—Research and Developmental Aspects and Training.

LAURA K. SMITH is Physical Therapy Supervisor and in charge of educational programs, Southwestern Poliomyelitis Respirator Center, Houston, Texas. She is a graduate of San Jose State College and received her physical therapy education at Stanford University. Miss Smith served as Acting Instructor, Division of Physical Therapy, Stanford University prior to her present position. Miss Smith contributed to the book, "Treatment of Acute Poliomyelitis" and is co-author of "Physical Therapy in the Poliomyelitis Respiratory Patient" published in *Physiotherapy* this past year. She will be a co-participant in the presentation "Convalescent Program for the Severely Disabled" during the symposium, "The Community Rehabilitation Program."

SAIMA TAWAST-RANCKEN, M.D., is Doctor of Physical Medicine, University of Helsinki, Finland; Instructor of Anatomy, Kinesiology, and Physical Therapy, Physiotherapy College of Invalid Foundation, Helsinki; Physical Therapy Instructor, School of Medicine, University of Helsinki and Turku; Director, Posture Clinic, Mannerheim League, Helsinki; and Instructor, Biological Muscular Action, University of Helsinki. Dr. Tawast-Rancken is Vice-President of the Academy of Sports in Finland. She is the author of numerous articles including reporting of research on the influence of the central nervous system on the irritability of frog nerve and muscle; The Physiological Basis of Educational and Corrective Physical Training; and Gymnastics for the Middle-Aged. The subject of Dr. Tawast-Rancken's paper will be "Posture Education in Finland."

MOLLY TURNER is Superintendent Physical Therapist, Department of Physical Medicine, University College Hospital, London, England. Miss Turner received her physical therapy education at the National Hospital for Nervous Diseases and at University College Hospital. She was Assistant Physical Therapist at Haslemere Hospital and worked under the supervision of Sir Morton Smart, G.C.V.O., D.S.O. Miss Turner was in charge of a sector of hospitals when they were grouped in Emergency Medical Service during World War II. Miss Turner is the author of "Why Have Pain" and will discuss "Posture and Pain" at the Second Congress.

Association Activities

Mrs. Marjorie Anne Crawford of Panama City, Florida, passed away recently. Mrs. Crawford attended McGill University and Michigan State College and completed her physical therapy education at the University of Pennsylvania in 1953. She was associated with United Cerebral Palsy in Panama City. Mrs. Crawford had been a member of the Association since 1953 and was a member of the Florida Chapter.

Chapter News

California

The annual meeting of the California Chapters was held on March 17th at the Hotel Mark Hopkins in San Francisco. The theme was "Physical Therapy Futurama" and the program outstanding. The keynote address delivered by Hazel Furscott was entitled "Then and Now." This was followed by a panel discussion on Educational Trends in Physical Therapy. In the afternoon topics presented included: New Technics and Equipment; Rehabilitation Needs in the State; and Physical Therapy Futurama: Summary and Prognosis. The banquet speaker was the well known novelist Kathleen Norris. Exhibits of particular interest on display were gadgets, self-help devices, and therapeutic exercise equipment improvised by physical therapists.

Kansas

The Northeastern District recently held a successful Open House program at Wadsworth Veterans Hospital. One week before the program the film "Within Your Hands" was shown to junior and senior students in three local high schools. This was followed by discussion and distribution of recruitment pamphlets. A list of interested students' names, addresses, and phone numbers was made for future contacts.

Persons who attended the Open House at Wadsworth Hospital in the evening one week later included high school students, their parents and teachers; college students, their wives and teachers, and the physical therapy students from Kansas University.

They were greeted in the hospital auditorium by hospital officials including the chief physical therapist and the program director and then saw a color film depicting the role of the physical therapist on the rehabilitation team taken at the Woodrow Wilson Institute for Rehabilitation.

Later physical therapists conducted the guests on a guided tour of the physical therapy facilities and explained the use of physical therapy. Refreshments were served. Ten members of the District took part in this event and were gratified at its success.

New Jersey

The New Jersey Chapter of the American Physical Therapy Association has invited the New York, Pennsylvania, and Connecticut Chapters to participate in a workshop to be held on Saturday, April 21, 1956, from 10:00 A.M. until 5:00 P.M. at The Kessler Institute in West Orange, New Jersey. The subjects which will be discussed are: "Splinting and Bracing," and "Problems of the Hemiplegic Patient." The New Jersey Chapter urges members of these chapters as well as any other therapists who may be able to attend the workshop to meet, on April 21, for a stimulating discussion and exchange of ideas. Will American Physical Therapy Association members of chapters other than New Jersey, New York, Pennsylvania, or Connecticut, who plan to attend, please notify Miss Thora Nordlund, Corresponding Secretary, 26 Ellington Street, East Orange, New Jersey.

West Virginia

The Chapter Newsletter is headed by a letter from the Chapter President, Joseph Manchin. A portion of the letter follows:

> "It is important that every physical therapist in this State become an active member of the APTA. It is an accepted fact that concerted action by local groups is of prime importance in the development of our profession.
>
> Many of us ask, "What has the APTA done for me, or what can the APTA do for me?" There are several things that the APTA has done if we only be honest and face the fact that the reason we are so proud to be quick to say to people, "I am a physical therapist" is because the APTA has been responsible for the educational standards, professional relations with allied groups, legislative guidance,

and recruitment programs which have made Physical Therapy a name of which you can be proud."

The Newsletter also contains a brief history of the Chapter since its organization in 1947. Mention is made of incorporation as the West Virginia Physical Therapy Association in 1949, names of elected officers, and four visits from members of the National Office staff. The membership has grown from five charter members in 1947 to 28 active members in 1956.

Self-Employed Section Notice

The cooperation of every member of the Self-Employed Section is needed to see this Section well on its way to a good organizational foundation. You are urged to attend the first annual meeting on Saturday, June 23, following the Second World Congress. If you are unable to attend this meeting we would appreciate a letter containing your questions or suggestions. This may be addressed to:

Mrs. Marion Boyer, Vice-Chairman
4318 Lemmon Avenue
Dallas 19, Texas

or

Mr. Harold Feldman, Corresponding Secretary
5900 Van Nuys Boulevard
Van Nuys, California

A breakfast or luncheon may be planned if desired by the membership.

The Section officers have arranged for a Registration headquarters where all pertinent information will be available through the week of the Congress. Members should check on Section activities at the information and message center.

Executive Committee meetings will be scheduled as necessary during the week preceeding the meeting.

PROGRAM

1st Annual Meeting — Self-Employed Section
Hotel Statler — New York City
June 23, 1956

9:00 A.M. — 12:00 Noon

For interested members of the American Physical Therapy Association

The Self-Employed Section

1. Purpose
2. How it will function
3. Membership
4. Future of the Section
5. Where does this Secton fit into the whole organization of the APTA — nationally, state chapter, chapter district?
6. Responsibilities

2:00 P.M. — 5:00 P.M. — Business Meeting

For members of the Section
Agenda

1. Adoption of Rules of Order
2. Election of new Chairman for two-year term of office
3. Unfinished Business
4. New Business

New Student Members

Boston University

Joan Amerino	Barbara Johnson
Carol Anderson	Hyla Kimenker
Leon Anderson, Jr.	Ruth Kliman
Mary Ault	Carol Lowenberg
Delores Aupperle	Bernice Lyman
Nancy Ballantyne	Nancy Margenau
Nancy Benson	Myrna McElhiney
Myrna Bernard	Richard Montgomery
Victor F. Birt	Judith Murphy
Robert Bolin	Inez Pereira
Barbara Brown	Elissa Perrotto
Florence Carroll	Shirley Prada
Marguerite Carusone	Elsa Ramsden
Patricia Courtney	Marianne Reardon
Leonard P. Couture	Marjorie Rushton
Toby Cron	Phyllis M. Scipione
Carolyn DeMarco	Joan Seglin
Senora Drewery	Barbara Simon
Edith Einspruch	Barbara Smith
David Farnham	Nancy Stearns
Pauline Fleming	Janice Trask
Jacqueline Gamboa	Marjorie Tucker
Roslyn Gardner	Faye Vaughn
Carol Hamilton	Bryan Walsh
Viola Hatch	Lily Wee
Judith Heinold	Alberta Westerhoff
Shirley Hershkowitz	Suzanne White

Bouvé-Boston

Joyce MacLaren

New York University

Anne-Marie Grates Sheila Weiswasser

Puerto Rico School

Florence S. Cotis

University of Connecticut

Lois Cohen Rose M. DeBella
Frances Ulberg

University of Pennsylvania

Kay Selner

University of Wisconsin

Janet Lemke

University of Texas

Carolyn Closs Edward Green
Charles Friedlander Edith Windell
William Winborn

Candidates Continued From March Issue
For Nominations Committee
(Three to be elected)

Margaret Moore, Chief, Department of Physical Therapy, North Carolina Memorial Hospital, University of North Carolina

Erma Myers, Physical Therapist, General Hospital of Everett, Everett, Washington

Vida Jo Niebuhr, Chief, Physical Therapy Service, Rehabilitation Department, National Institute of Health, Bethesda, Maryland

Thelma Pedersen, Assistant Professor and Physical Therapy Director, School of Physical Therapy, University of Oklahoma

Barbara Robertson, Chief, Physical Therapy Section, Army Medical Service School, Fort Sam Houston, Texas

Barbara White, Physical Therapy Consultant, Office of Vocational Rehabilitation, Department of Health, Education and Welfare, Washington, D. C.

Contributions — Second Congress Fund

Texas Chapter	$ 23.50
Southern California Chapter	9.00
Marion B. Stewart	10.00
Northern District, Indiana Chapter	10.00
Illinois Chapter	100.00
Georgia Chapter	105.00
New Hampshire Chapter	25.00
Connecticut Chapter	160.00
Hawaii Chapter	25.00
Northeastern District, Ohio Chapter	40.17
District of Columbia Chapter	77.63
Gwen Gower-Rees (Canada)	8.50
Total to Date	$4,487.04

Physical Therapists Attend Course on Management of Mass Casualties

The American Physical Therapy Association and its members have long recognized a responsibility to contribute their skills in civil defense. At their semiannual meeting the Board of Directors reemphasized the importance of our participation as a profession. The following report of a course given at the Walter Reed Army Institute of Research is an example of specific planning and orientation.

Major Louise Christman, Chief Physical Therapist, Walter Reed Army Hospital, Washington, D. C., and Eleanor G. Loomis, Acting Chief, Physical Medicine and Rehabilitation Branch, Public Health Service completed the one week course on the Management of Mass Casualties at Walter Reed Army Institute of Research, Washintgon, on February 4.

The purpose of this course, the first of its kind, is to acquaint members of the medical profession and of those professions allied to medicine with the problems involved in the treatment of mass casualties. Although the problems presented and their solutions are purely speculative, they serve to encourage professional persons to seek solutions rather than to accept the concept that "too little can be done."

For the physical therapist this presumes an upgrading of normal duties to include such areas as care of burns, administration of intravenous fluids, giving of hypodermics, and training of casualties for early ambulation. Throughout the course stress is laid on the role of paramedical personnel in the event of nuclear attack. A physical therapist, for example, by virtue of education and experience, can be expected to play a vital role in the management of burns. With the aid of a simple calculator that provides a rapid estimate of the amounts and types of fluids necessary for replacement in the first 24 hours, it is possible for the physical therapist with pre-disaster orientation to supervise the care of large numbers of casualties. The calculator was devised by the Surgical Research Unit, Brooke Army Medical Center, Fort Sam Houston, Texas.

In response to requests for admission to the course from civilian physicians, representatives of medical schools, the Federal Civil Defense Administration and other government agencies, and the American Medical Association, the number of people attending the course has grown from 120 in 1953 when it was first established to over 600 last year. Plans for next fiscal year include six more classes for military personnel at Army Medical Service School, Fort Sam Houston, Texas, in addition to the six classes at Walter Reed Army Institute for Research.

The course is open to key medical and paramedical personnel and to a limited number of Reserve officers not on active duty.

Member's Article in Nursing Journal

Mary Eleanor Brown, Chief Physical Therapist, Department of Physical Medicine and Rehabilitation, St. Vincent's Hospital, New York, is the author of "Ten Motion Games for Fun and Therapy" published in the January 1956 issue of the *American Journal of Nursing*.

Summer Program for the Master's Degree in Physical Therapy at Stanford University

Beginning in June, 1956, the graduate program that is offered during the school year at Stanford will also be available in the concentrated eight-week summer sessions. Courses for the master's degree can be completed in three summer quarters of study. These include advanced work in anatomy, kinesiology, and therapeutic exercise, seminars in administration and thesis problems, and courses in educational testing and evaluation, and the use of visual aids. Additional courses in education and counseling are available, and students may include projects in their program that may be completed during the year.

The dates for summer quarter, 1956, are June 25 to August 21. For further information, write to the Director, Division of Physical Therapy, Stanford University, Stanford, Calif.

Marriages

Mary Austin, of West Haverstraw, N. Y., to Harold P. Chaney, Stony Point, N. Y.

Pauline Beck, of Boston, Mass., now Mrs. Pauline B. Ingold, Cincinnati, Ohio.

Marie Brown, of St. Louis, Mo., to Lee W. Short, Clayton, Mo.

Sixta Dominguez, of San Juan, P. R., now Mrs. Sixta D. Orraca, Bayamon, P. R.

Anne Evans, of Coronado, Calif., to William Sutherland, San Diego, Calif.

Marian A. Haas, of Philadelphia, Pa., to Stephen O. Galer, Philadelphia.

Ann Hinman, of Seattle, Wash., now Mrs. Ann H. Vogel, Vancouver Island, B. C.

Rita B. Houde, of Truth or Consequences, N. Mex., now Mrs. Rita H. Weatherspoon, Truth or Consequences.

Irene Novikoff, of San Francisco, Calif., to Stanley Levin, Fort Smith, Ark.

Gerda Preiss, of Forest Hills, N. Y., now Mrs. Gerda P. Katz, Forest Hills.

Elinor B. Sherman, of Needham, Mass., now Mrs. Elinor S. Prescott, Merrick, N. Y.

Ruth H. Simmons, of Hamilton AFB, Calif., now Mrs. Ruth S. Sexton, Huntsville, Tex.

Charlotte J. Stallings, of Raymondville, Tex., now Mrs. Charlotte S. Davenport, Austin, Tex.

Florence Wambach, of Ontario, N. Y., now Mrs. Florence W. Karn, Baltimore, Md.

Association Members Commissioned

Two additional male physical therapists have been commissioned in the Army Medical Specialist Corps, bringing the number of men in the Corps to five since the passage of the Bolton Bill last August.

Second Lieutenant William P. Fortune of Boston, Mass., was an Army private on duty at Army-Navy Hospital, Hot Springs, Arkansas, when he received his commission and orders to the February Army Medical Service Officers' Orientation class at Army Medical Service School, Fort Sam Houston, Texas. He is a graduate of Springfield College, Mass., and the Physical Therapy Course of the University of Southern California.

Second Lieutenant Charles Rickrode of Chambersburg, Pa., will report to the April Orientation class at Fort Sam Houston. He is a graduate of Weschester State Teacher's College and of the University of Pennsylvania Physical Therapy Course.

Upon completion of the four-week orientation course, Lieutenants Fortune and Rickrode will be assigned to Army hospitals as staff physical therapists.

Short Term Course in Rehabilitation

Announcement has been received of the following short term course available to physiatrists, psychiatrists, other medical specialties, psychologists, social workers, vocational counselors, placement workers, physical therapists, special educators, occupational therapists, workshop supervisors, administrators, speech therapists and group workers.

Name of Course

Team Concepts and Techniques in Rehabilitation

Sponsor of Course

Columbia University and Institute for The Crippled and Disabled

Dates of Course

May 28 through June 22, 1956

Course Content

The course will include seminars in rehabilitation philosophy and principles, continuous case seminars conducted by the enrollees and participation in the presentation of certain cases to the student seminar and to the Institute's staff case conference. Lectures and discussions by guest specialists and visits to other rehabilitation facilities in the New York area will be included.

Fees

Tuition—$100.00

Enrollment

Enrollment will be limited to 25 and applications received by May 4, 1956 will be given preferential consideration.

For further information and application form please contact:

Dr. Abraham Jacobs
Department of Psychological Foundations & Services
Teachers College, Columbia University
New York 27, N. Y.

Short Term Course

Name of Course

Second Annual Workshop in Speech Problems in Cerebral Palsy

Dates of Course

July 9 to July 20, 1956

Location of Course — Orthopaedic Hospital

Course Content

Lectures, discussions and demonstrations in the speech and language problems of young cerebral palsied children and application of technics of individual and group speech therapy

Admission Requirements

Physical therapists—graduate of AMA approved school

Academic Credit

2 semester hours credit will be granted by University of Southern California

Tuition

$35.00—If academic credit desired, there is an additional fee of $25.00

For further information and application forms contact:

Robert Harrington, Ph.D.
Speech Pathologist
2400 Flower Street
Los Angeles 7, California

Education for Leadership

A training of trainers program in the nature of three summer work conferences based on the theme of "Education for Leadership in a Free World" and staffed by leaders from industry and education will be held at Columbia University as follows:

Improving Staff Relations — July 9-20, 1956
Professional Development and In-Service Training — July 23-August 3, 1956
Evaluation and Action-Research — August 6-17, 1956

Program procedures will be delegate oriented, will have small seminars and training groups, and will use the technical resources of the University and the industrial community.

Further information may be obtained by writing:

Three Summer Work Conferences
Box 304, Columbia Teachers College
New York 27, New York

General News

Medical Education Week — April 22-28

The medical profession and all allied medical personnel are being called upon to help promote the first nationwide observance of Medical Education Week, April 22-28.

Specifically, Medical Education Week has three functions: (1) to focus national attention on the significance of medical education and the problems of medical schools; (2) to bring home to the public the contributions of medical science to American life; and (3) to foster public interest, through wide public knowledge, in the private support of medical education.

The sponsors of the Week hope the American people, through an awareness of the benefits received through the schools' achievements, will be converted from a disinterested, and sometimes hostile, public to appreciative friends of medical education.

By opening the doors of the nation's medical schools, both literally and figuratively, to public view, many of the false rumors and myths hampering U.S. medical education can be disproved. Too many Americans believe the schools are lagging far behind the national rate of growth by keeping a tight lid on enrollments, when, in fact, the academic year of 1954-55 was another all-time record breaker in both enrollments and graduates. Over the past half century the rate of increase of physician graduates has outstripped the rate of growth among the general population.

These facts and the dramatic success in the schools' laboratories will be directly related to the public — the beneficiaries of this progress — during Medical Education Week.

President Eisenhower, in giving his personal endorsement to the observance, said, "This Week will give the American people a special opportunity to learn of the great contributions to the national welfare which American medical schools have made, and the goals which they have set themselves for the future."

Each of the sponsoring organizations — the American Medical Association and its Woman's Auxiliary, the Association of American Medical Colleges, the Student American Medical Association, the American Medical Education Foundation, and the National Fund for Medical Educa-

tion — are enlisting the cooperation of their memberships to help tell this story.

Most medical societies throughout the country have already appointed chairmen for their respective community coordinating committees and they are therefore prepared to welcome your assistance in building programs for Medical Education Week.

The success of this first observance depends on the cooperation and help of everyone in the field of health and medical care.

World Health Day — April 7, 1956

"Destroy Disease-Carrying Insects!"

Dr. Fred L. Soper, Director of the Pan American Sanitary Bureau, Regional Office of the World Health Organization

For ages man has accepted insects as an unavoidable curse and many people still think of them more as a nuisance than as one of man's deadliest enemies. Only within the past half century has their role as disease carriers been firmly established. Until recent years their control was costly, geographically restricted — and not too effective.

Today the picture has changed radically, with the development of residual insecticides such as DDT, which remains effective for at least six months. This has made possible the concept of *eradication*, one of the most important developments in public health history.

It has been estimated that the actual body mass, as well as the vastly superior number, of insects in the world is greater than that of all mammals including man. In seeking their food they acquire infections and then pass on to us a host of diseases such as malaria, yellow fever, typhus, plague, sleeping sickness. Others contaminate our food, spreading scourges like cholera and dysentery.

The Pan American Sanitary Bureau has taken the lead in this Hemisphere in promoting eradication, rather than mere control, of those diseases, or insect vectors which are amenable to eradication. We have already seen most encouraging results: the urban yellow fever mosquito, once a grave threat in Brazil, has been eradicated from that largest of all countries in the Americas, and has either been eradicated or is in process of eradication in nearly every other country in the American Continent.

World attention is today focused on malaria, still one of the most widespread killers in many countries. Governments everywhere have joined hands, with international assistance, in an effort to stamp out this ancient curse once and for all. Speed is of the essence, because many insects, including the malaria-spreading mosquito, are developing resistance to insecticides. The chain of transmission must be broken before growth of resistance makes the task more difficult and more costly. The Pan American Sanitary Organization has launched, here in America, a Continent-wide program to wipe out malaria. We shall not be satisfied until it is accomplished.

Public understanding and cooperation are essential for success in the struggle to *destroy disease-carrying insects*. Everyone can take part in this great crusade by helping to increase awareness of the insect's role in the dissemination of disease.

VA Program of "Work Adjustment Training"

Hundreds of severely disabled veterans who might still be on the sidelines have gained a new start toward independent living through a Veterans Administration program of "work adjustment training."

The program, tailored to fit the needs of each veteran, is designed to help him master the fundamentals of day-to-day living and working: it is not designed to train him thoroughly for a specific job.

Most "work adjustment training" has been provided for disabled veterans in sheltered workshops and rehabilitation centers, where they can receive the sympathetic and understanding attention so necessary in the first steps of adjustment to the work-a-day world. A few vocational schools also offer this training.

The VA program has four goals, all related to the end of restoring the veteran to a useful life:

It helps him acquire fundamental work capacities—such as training a double arm amputee to manipulate his hooks in handling papers for a filing job. It helps him gain personal confidence that he *is* able to work. It helps him adjust to work activities and to his associates on the job. And it helps him develop fitness for a regular program of vocational training that can follow or, if that is not needed, for employment.

Through "work adjustment training," severely disabled veterans already have prepared for jobs as draftsmen, office workers, restaurant workers, leatherworkers, woodworkers, radio repairmen, printers, bookbinders and many more.

From its files, VA described the case of a seriously disabled Korea combat veteran rehabilitated through "work adjustment training." In 1950, during the worst of the fighting in

Korea, this New England veteran was injured in the head by shrapnel.

As a result, he developed epilepsy, lost the vision of one eye and practically lost the use of his right arm. His multiple disabilities were almost too much for him to cope with. He tended to withdraw from society, and live a life alone.

He spent most of his time at the movies, he said later, where he could relax in the protective darkness of the theater, confident that at least there, "unfriendly" people weren't staring at him.

Finally, in the fall of 1952, he applied to VA for Public Law 894 training—a law providing vocational rehabilitation training for disabled Korea veterans.

VA counselors recognized that the veteran was by no means ready for a regular course of training, even though he did have an aptitude for clerical work. But they did recommend "work adjustment training," to help him learn to adjust to the basic elements of holding a job.

He enrolled for six months in a sheltered workshop, where the emphasis was placed on increasing his ability to socialize; on gaining clerical practice, and on learning to perform his duties with his good left hand.

According to VA progress reports, here's what happened to him:

November, 1952 (when he began training): "At first he was ill at ease, unhappy, generally confused—awkward, sensitive, but very cooperative. He did not take too well to typing, so this was replaced by work on electric calculating machines, mimeographing, filing, keeping production and shipping records."

During the sheltered workshop experience he developed the ability to write with his left hand, acquired self-confidence, gained modest ambitions and optimism about his future.

In June 1953, with VA's help, he enrolled in a 12-month intensive clerical course in a secretarial school, under Public Law 894.

At the end of his fourth month at school, October 1953, the veteran found satisfactory employment as a messenger and mail clerk with the Government and is able to do his work well. He has had one seizure since he began working and the agency plans to continue him as a permanent worker.

Course Quota Filled

The quota for the course, "Neuromuscular Facilitation Techniques," to be given at Boston University, Sargent College of Physical Education, June 25 to July 6, has been filled.

Index to Current Literature

(continued from page 249)

Reaction of Intervertebral Discs to Compression Forces. Carl Hirsch, J. Bone & Joint Surg., 37-A:1188-1198, December 1955

Treatment of Bone and Joint Tuberculosis. Alan D. Smith, J. Bone & Joint Surg., 37-A:1214-1222, December 1955

Conservative Approach in the Treatment of Fractures of the Calcaneus. Leonard Barnard, J. Bone & Joint Surg., 37-A:1231-1236, December 1955

Epiphyseal Stimulation in the Lower Extremities, Warren G. Kramer, California Med., 83:424-426, December 1955

Herniation of Intervertebral Discs—An Evaluation of the "Indirect Signs." A. J. Williams and T. Fullenlove, California Med., 83:433-434, December 1955

Residual Disability Following Acute Ankle Sprains. W. R. Bosien, S. Staples and S. W. Russell, J. Bone & Joint Surg., 37-A:1237-1242, December 1955

Vertebral Body Fusion for Ruptured Lumbar Discs. A Roentgenographic Study. Ralph B. Cloward, Am. J. Surg., 90: 969-976, December 1955

Radiological Evaluation of Low Back Pain. W. J. Landry, J. T. Brierre and N. S. Hunt, J. Louisiana State M. Soc., 107:484-486, December 1955

Skeletal Osteophytosis. Edgar M. Bick, J. Mt. Sinai Hosp. N. Y., 22:316-321, November-December 1955

Metabolic Studies of Children with Idiopathic Scoliosis. G. Stearns, T. Chen, J. B. McKinley and I. V. Ponseti, J. Bone & Joint Surg., 37-A:1028-1034, October 1955

Treatment of Ligament Injuries of the Knee Joint. D. H. O'Donaghue, Wisconsin M. J., 54:593-598, December 1955

Whiplash Injuries. E. G. Lipow, South. M. J., 48:1304-1310, December 1955

Conservative Management of the Painful Shoulder. A. A. Michele, New York State J. Med., 56:49-61, Jan. 1, 1956

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Prognosis and Treatment of Dupuytren's Contracture. Raoul Tubiana, J. Bone & Joint Surg., 37-A:1155-1168, December 1955

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Hydrocortisone Therapy of Periarticular Pain. Dan. O. Kilroy, California Med., 83:416-418, December 1955

Management of Pain in Peripheral Arterial Ischemia. Philip M. Marcus, West. J. Surg., 63:728-731, December 1955

Herniated Cervical Disk and Atypical Facial Neuralgia: Muscle Spasm as a Pain Factor. B. D. Judovich and G. R. Nobel, J. Lancet, 75:453-460, October 1955

The Surgical Relief of Pain. Joseph P. Evans, Postgrad. Med., 18:500-509, December 1955

POLIOMYELITIS

Thoracoscapular Involvement in Poliomyelitis. E. Moskowitz and Z. K. Laszewski, Arch. Phys. Med. & Rehab., 36:766-770, December 1955

Spread of Poliomyelitis Infection in Nursery Schools. J. R. McCarroll, J. L. Melnick and D. M. Horstmann, Am. J. Pub. Health, 45:1541-1550, December 1955

Acute Poliomyelitis of the Mother, with Aural Lesions in the Premature Infant. George Kelemen, Arch. Otolaryng., 62:602-610, December 1955

Physical Therapy Programs—1956

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Schools offering the four year program leading to a baccalaureate degree will accept high school graduates, *as well as transfer students.* Schools offering the 12 to 16 months program leading to a certificate will accept students who have completed all or most of their undergraduate work providing they meet certain course requirements. Recipients of a degree or certificate have equal professional recognition and status. For specific information regarding each school's entrance requirements, tuition, and other fees, please write to the director indicated below. All students should investigate course requirements *early.*

	Degree	*Certificate*
CALIFORNIA		
Mrs. Mary J. Dodge School of Physical Therapy Childrens Hospital Society 4614 Sunset Boulevard Los Angeles 27		†
Mr. R. William Berdan School of Physical Therapy College of Medical Evangelists 312 N. Boyle Avenue Los Angeles 33	†	†
Mrs. Margery L. Wagner Curriculum in Physical Therapy University of California The Medical Center San Francisco 22	†	†
Miss Charlotte W. Anderson Department of Physical Therapy University of Southern California University Park Los Angeles 7	†	†
Miss Lucille Daniels Division of Physical Therapy Stanford University Stanford	†	†
COLORADO		
Miss Dorothy Hoag Curriculum in Physical Therapy University of Colorado Medical School Denver 20	†	†
CONNECTICUT		
Miss Frances Tappan School of Physical Therapy U 101 University of Connecticut Storrs	†	
ILLINOIS		
Miss Elizabeth C. Wood Course in Physical Therapy Northwestern University Medical School 303 East Chicago Avenue Chicago 11	†	†
IOWA		
Mrs. Olive C. Farr School of Physical Therapy State University of Iowa University Hospitals Iowa City		†
KANSAS		
Mrs. Ruth G. Monteith Section of Physical Therapy University of Kansas Medical Center Kansas City 3	†	†
LOUISIANA		
Miss Marjorie F. Martin School of Physical Therapy Charity Hospital of Louisiana 1532 Tulane Avenue New Orleans 12		†
MASSACHUSETTS		
Miss Shirley M. Cogland *School of Physical Therapy Simmons College-Children's Hospital 300 Longwood Avenue Boston 15	†	†
Miss Adelaide L. McGarrett Curriculum in Physical Therapy Sargent College, Boston University 6 Everett Street Cambridge 38	†	†
Miss Constance K. Greene Curriculum in Physical Therapy *Bouve-Boston School, Tufts College Medford 55	†	
MICHIGAN		
Miss Virginia Wilson Curriculum in Physical Therapy University of Michigan University Hospital Ann Arbor	†	†
MINNESOTA		
Mrs. Ruby M. Overmann Course in Physical Therapy University of Minnesota 860 Mayo Memorial Hospital Minneapolis 14	†	
Mr. Darrell D. Hunt School of Physical Therapy Mayo Clinic Rochester		†

* Accepts women students only.

	Degree	Certificate
MISSOURI		
Sr. M. Imelda, S.S.M. Course in Physical Therapy St. Louis University 1325 South Grand Boulevard St. Louis 4	†	
Miss Beatrice F. Schulz Department of Physical Therapy Washington University School of Medicine 660 So. Kingshighway Blvd. St. Louis 10	†	
NEW YORK		
Miss Dorothy L. McLaughlin *School of Physical Therapy Albany Hospital-Russell Sage College New Scotland Avenue Albany 1	†	†
Miss Mary E. Callahan Courses for Physical Therapists Columbia University College of Physicians & Surgeons 630 West 168th Street New York 32	†	†
Miss Elizabeth C. Addoms Physical Therapy Curriculum School of Education, New York University Washington Square East New York 3	†	†
Miss Mildred F. Heap Program in Physical Therapy University of Buffalo 2183 Main Street Buffalo 14	†	†
NORTH CAROLINA		
Miss Helen Kaiser Division of Physical Therapy Box 3403, Duke Hospital Durham		†
OHIO		
Miss Dorothy Spark Course in Physical Therapy Frank E. Bunts Educational Institute 2020 East 93rd Street Cleveland 6		†
OKLAHOMA		
Miss Thelma Pedersen School of Physical Therapy University of Oklahoma, Medical Center Oklahoma City 4	†	†
PENNSYLVANIA		
Miss Kathryn Kelley Curriculum in Physical Therapy D. T. Watson School of Physiatrics Leetsdale		†
Miss Dorothy E. Baethke Division of Physical Therapy University of Pennsylvania 1818 Lombard Street Philadelphia 46	†	†
PUERTO RICO (All classes given in Spanish)		
Mrs. Lutgarda Vega de Cruz School of Physical & Occupational Therapy Professional Bldg., 8th floor Stop 22, Santurce		†
TEXAS		
Miss Doris E. Porter Grady Vaughn School of Physical Therapy Baylor University Hospital Dallas 1		†
Miss Ruby Decker Curriculum for Physical Therapists University of Texas, Medical Branch Galveston	†	†
Mrs. Cecelia J. Lee School of Physical Therapy Hermann Hospital Houston 25		†
VIRGINIA		
Miss Susanne Hirt School of Physical Therapy Medical College of Virginia Richmond 19	†	
WISCONSIN		
Miss Margaret Kohli Course in Physical Therapy University of Wisconsin Madison 6	†	†
U. S. ARMY MEDICAL SERVICE		
*Physical Therapy Course Medical Field Service School Brooke Army Medical Center, Fort Sam Houston, Texas and Brooke, Letterman and Walter Reed Army Hospitals Write to: The Surgeon General Department of the Army Washington 25, D. C. Att.: Personnel Division		†

*Accepts women students only.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Injuries of the Extensor Tendons in the Distal Part of the Leg and in the Ankle

Paul R. Lipscomb and Patrick J. Kelly, J. BONE & JOINT SURG., 37-A: 1206-1213, December 1955

Little mention has been made in the literature concerning extensive injury to the extensor tendons in the distal leg and ankle. The main extensor muscles of the foot are the tibialis anterior, extensor hallicus longus, extensor digitorum longus and peroneus tertius. On the distal leg, the first three of these tendons pass under the transverse crural ligament and the cruciate crural ligament and lie on the distal part of the tibia. This arrangement converts the passage into a tight osseofibrous canal. While each tendon has a separate sheath to insure its excursion, it can be seen that lacerations of the foot in this region could, in the process of healing, cause these tendons to become bound down in the osseofibrous canal to the tibia, to each other, to ligaments, or to the overlying subcutaneous tissue and skin.

A review of patients at the Mayo clinic between 1935 and 1952 revealed 12 patients with 13 such injuries (one bilateral). Most of these injuries were caused by farm machinery. In an analysis of the results of treatment, a good result indicated normal or nearly normal function of the foot and ankle: fair if there was some function; poor if the patient was unable to dorsiflex the foot and had a feeling of instability.

In the reported series of 13 injuries, 9 (69 per cent) were good; 2 (15 per cent) were fair and 2 (15 per cent) were poor. The factors limiting successful repair were: (1) the anatomy of the site of injury, (2) the number of tendons severed, (3) presence of infection, (4) concurrent injury of the ankle or subtalar joint and (5) presence of an adherent scar or contracture of the achilles tendon in old injuries.

The same principles of treatment which apply to injuries of the wrist and hand apply to lacerations of the tendons of the foot. If repair of the fresh tendon injury is not successful, or if there is impaired function as the result of an old injury, late repair by tendon suture, tendon graft or tendon transfer is indicated.

Damp Cold vs. Dry Cold. Specific Effects of Humidity on Heat Exchange of Unclothed Man

A. C. Burton, R. A. Snyder, W. G. Leach, W. R. Butler and D. J. Bartelink, J. APPL. PHYSIOL., 8:269-278, November 1955

Nine subjects were exposed, lying unclothed, each in four experiments of 100 minutes duration, at 48° and 58° F. with low (30 per cent) and high (80 per cent) relative humidity. Rectal and skin temperatures at five points were measured with thermocouples every minute, and O_2 consumptions were measured every 20 minutes by a metabolism machine. Sensations of cold, pilometer response and shivering were recorded from signals by the subjects. Results were analyzed, by "paired" statistics, to discover significant differences at the same temperature, associated with relative humidity.

The course of the skin temperatures was remarkably the same whether the humidity was high or low. The difference was less than 0.3° C. for all points except the thorax, where at 48° F. the temperature averaged 1.3° C. higher(significant). There was a significantly greater rise of rectal temperature on exposure to cold when the humidity was low, indicating a greater physiological response of vasoconstriction and a greater increase in metabolism.

Shivering was markedly greater in incidence and severity when the humidity was low. This was significant even at the higher temperatures. This could explain the higher thoracic temperatures in the low humidity, because of increased blood flow to the shivering thoracic muscles. Sensations of cold were also significantly greater in the low humidity at both temperatures, in spite of the fact that skin temperatures were not affected by the humidity.

Pilometer response was consistently seen at the lower temperature and was not significantly related to humidity.

The degree of vasoconstrictor response was estimated by calculating the insulation of the tissues. This was about maximal (about 0.8 Clo Units for the whole body) at both temperatures, with some indication that vasoconstriction was slightly greater (except for the thorax) in the low humidities.

It was suggested that the paradox of a greater sensation of cold and metabolic response at low humidities, though skin temperatures and heat loss were independent of humidity, could be due to the uptake of moisture in the skin at high humidities, causing an increased thermal conductivity in the region of the receptors.

The Development of Play As A Form of Therapy: From Rousseau to Rogers

Dell Lebo, AM. J. PSYCHIAT., 112: 418-422, December 1955

Psychoanalysis relies extensively on the process of free association and the importance of the patient relating episodes in his early life to the therapist. While this method of therapy and diagnosis often proves successful with the adult, it is not too useful with the child. The child is not interested or capable of relating freely his past and his anxieties.

Therefore, beginning about 1920, different methods of child analysis were begun. Most of the early advances in the application of psychoanalytical principles to child life arose from indirect observations combined with adult interpretation. Rousseau was the first person to advocate studying children at play in order to understand and educate them. Anna Freud and Melanie Klein sought to find the unconscious motivation behind imaginative play and drawings. The child's conversation and action with his toys were analogous to free association of adult psychoanalysis.

Variations of play therapy developed. With so-called active play therapy the therapist gives the child a few selected toys and then plays with and encourages the child to enact certain traumatic scenes. Some therapists stress observing the emotional relationship between child and the therapist. In passive play therapy, the child is given free selection of toys and the therapist observes more than participates. This is similar to relationship therapy, except that in the latter no effort is made to explain or interpret past experiences. It emphasizes present feelings and reactions.

Non-directive therapy was advocated first by Carl Rogers. With such a technic, the therapist strives to create a therapeutic situation where in the client sees and solves his own emotional problem. It leaves to the patient the freedom of deciding the nature and direction of changes he may wish to make.

The various theories of play therapy all advocate a natural situation in which the child can relax and reveal his ideas and emotions. Such an environment is invaluable diagnostically and therapeutically.

Further Evaluation of Heating by Microwaves and by Infrared as Used Clinically

Gordon M. Martin and J. F. Herrick, J. A. M. A., 159:1287-1288, Nov. 26, 1955

This article is concerned with the comparative effectiveness of various sources of heat on human tissue. Infra-red generators have been used for many years, and are known to be safe, inexpensive, and effective in heating at least the superficial tissues. In recent years high frequency electromagnetic energy has been utilized for heating tissues at relatively greater depths. This diathermy apparatus has been expensive, more difficult to use, and, if improperly used, fraught with some danger of burns and discomfort.

Measurements of heating with infra-red and microwave generators were undertaken according to the procedures used in evaluating diathermy equipment for the Council on Physical Medicine and Rehabilitation of the American Medical Association. The Council requires that a diathermy machine be able to develop a temperature of 40° C at the end of 20 minutes in the deep tissues of the quadriceps muscle on the anterior part of the human thigh. Twelve normal people were the subjects.

Heating effect of 2 microwave generators of frequency 2450 megacycles, wave length 12.2 cm. using all 3 standard directors was studied. Temperature readings were taken from a thermocouple before and after a heating period of 20 minutes. Energies from 50 to 100 per cent of maximal output were used depending on the comfortable tolerance of the patient. Consistent readings of 40° C or higher were obtained. A substantial rise in temperature occurred by the end of the first 5 minutes of heating. Temperatures increased from 10 to 15 minutes to a maximum and then decreased if the heating was continued to 30 minutes or longer.

Observations were made before and after heating for 20 minutes using 3 infra-red generators: (1) a 250 watt reflector heat bulb at distances of 14 to 16 inches; (2) a 300 watt tungsten-filament bulb with reflector at 14 inches; and (3) a 450 carborundum rod unit at 36 inches. Temperatures of deep tissue of thigh 5 cm. from the skin, indicated rises of maximum of 1 degree centigrade. The major amount of infra-red energy is absorbed in the skin and subcutaneous tissue so that heating of deeper muscular tissue occurs secondarily. According to these studies application of microwave diathermy at 2450 megacycles is a more effective means of producing temperature rises in the deep muscular tissues of human subjects.

Congenital Bilateral Arm Amputation

Thomas J. Canty and Rosella Asbelle, AM. J. OCCUP. THERAPY, 9: 278-286, November-December 1955

A case history is presented of a patient with congenital bilateral shoulder disarticulation amputations. A patient with such amputations presents particular difficulties for prosthetic fitting, training and function.

When this child, a girl, was age 4, she had surgery providing her with bilateral pectoral cineplastic motors. Following surgery, tunnel exercises were initiated and 2 months later cineplastically operated artificial arms were fitted. Training in the use of the arms continued for another 9 months.

Approximately a year later the child was admitted to another institution, the Navy Amputation Center, Oakland, California, for further study and evaluation. The child had not been using her artificial arms unless encouraged to do so. She had a remarkable ability to substitute her feet and toes for eating and other activities.

Immediately she was given new cineplasty pins made of stainless steel and covered with flexible polyvinyl chloride acetate. Daily treatment was started to increase tunnel excursion and to strengthen the musculature. She soon received a lock-elbow prosthesis and harness for the right side and later for the left side. Later, special miniature Navy-Fitch arms, using the cineplasties to operate the terminal devices, proved more successful. Leg loops were employed to provide elbow flexion and special shoulder hinges for shoulder abduction and adduction. She was able to use this type of prosthesis more naturally with less effort, faster and more efficiently. During an 8-week training period, she showed much progress and used her arms willingly. She could exert a force of 13 pounds with the left cineplasty and 14 pounds with the right. Excursion was 1¼ inches on the left and 1½ inches on the right. Hook openings were limited to 1½ inches. Eating with the use of special utensils became possible. Writing was legible, but at times unsteady. Further training and adjustments were indicated.

The Effect of Mephenesin on Muscle Tension

R. Dickes, G. H. Flamm, J. Coltrera, and M. Tobin, ARCH. NEUROL. and PSYCHIAT., 74: 590-597, December 1955

Since 1946 there have been many clinical reports concerning the use of mephenesin in spastic and hyperkinetic states. More recently, it has been used in the treatment of anxiety states. The increase in muscle tension in anxiety states is well known. The authors felt that it would be useful to study quantitatively muscle tension in anxious people and to report whether or not mephenesin could be shown to reduce muscle tension.

The presentation of words was selected as a visual stimulus to induce anxiety and muscle tension. Thirty subjects (psychiatric outpatients) were divided into two groups. One group received mephenesin, and the other group was given a placebo. Twelve stimulus words were presented. Eight words were neutral words and four were commonly used emotionally charged words. Muscle tension was measured electromyographically. The tension in the flexor and extensor muscles of each forearm was recorded. The time between the moment of presentation and the moment of correct reporting was determined and recorded as exposure time.

The mephenesin-treated group showed a lower mean muscle tension for the total word list, the neutral words, and the charged words, to a significant degree. Also, the mephenesin-treated group showed significantly higher thresholds of perception for the total list and for the charged and neutral words. These effects of mephenesin on muscle tension support other reports describing mephenesin as a muscle relaxant.

Possibly both the decrease in muscle tension and the increase in threshold of perception are the result of a sedative effect of mephenesin, whereby many bodily processes are decreased.

Mechanisms of Skeletal Muscle Pain and Fatigue

T. L. Dorpat and T. H. Holmes, ARCH. NEUROL. AND PSYCHIAT., 74: 628-640, December 1955

It has been postulated that pain in ischemic, active muscles is brought about by the accumulation in the tissue spaces of a metabolite designated as "Factor P." It has also been indicated that "Factor P" is the stimulus responsible for the pain of intermittent claudication and coronary occlusion. In these syndromes there is a definite pathologic process causing obstruction of vessels supplying blood to the active muscles, and therefore causing pain. Recent investigations of headache and backache syndromes demonstrate that sustained skeletal muscle tension can evoke pain in the absence of pathologic involvement of either the blood vessels or the muscles. These seemed to indicate that tetanic contractions cause reduction in muscle blood flow and that the pain mechanisms in these syndromes were essentially those of ischemic muscle pain. Therefore, several experiments concerning the relationship of skeletal muscle activity, muscle blood flow, and muscle pain in human subjects were undertaken.

Studies were made on the characteristics of pain produced in muscle contractions with circulation occluded and with circulation intact. Both rhythmic and sustained contractions were compared. Pain and tenderness predictably occurred during sustained and intermittent contractions performed with circulation intact and were qualitatively identical with ischemic muscle pain. These studies suggest that muscle contraction itself mechanically interferes with blood flow into the muscle and that the degree of vascular obstruction is proportional to the contraction strength.

A series of experiments was performed in which muscle temperature was measured during sustained contraction, during rhythmic exercise, and during sustained contractions with the part in hot and cold water baths. Muscle temperature was used as an index of blood flow. The observations of these experiments give evidence of the barrier to the muscle blood flow produced by sustained muscle contraction.

Experiments were also performed to show the effect of venous stasis on muscle pain, to compare fatigue and pain in skeletal muscle, and to demonstrate the effects of changes in the length of the rest pause on pain threshold and on endurance.

It is postulated that the accumulation of noxious metabolites (Factor P) in concentrations sufficient to exceed the pain threshold depends on the form, intensity, and duration of contraction. The available evidence indicates that muscle potassium is the pain factor, or one of its important components.

Applications of the MacQuarrie Test for Mechanical Ability

F. A. Hellebrandt and Sara Jane Houtz, AM. J. OCCUP. THERAPY, 9: 259-263 and 296, November-December 1955

The MacQuarrie Test has been used previously to rate the mechanical aptitude of more than 5,000,000 persons. The test composed of 7 subtests (tracing, tapping, dotting, copying, location, blocks, and pursuit) measures eye-hand coordination, hand dexterity, and spacial visualization. It is highly reliable, easily administered, and requires a minimum of equipment.

At the University of Illinois the test was used to introduce occupational therapy students to test administration and interpretation. The results were compared with established norms of 2,000 people and with previous results of physical therapy students. The group consisted of 31 graduate or student occupational therapists — all female except one and all right-handed except one.

The result showed that 87 per cent of this group ranked average or above the established average performance of mechanical ability when using their right hand and 75 per cent average or above when the left hand was tested. Three subjects who ranked lowest with left-handed performance also did poorly when using their right hand.

Dotting differentiates right from left handers and the degree of laterality dominance better than any other MacQuarrie subtest. This skill requires quickness of perception, in addition to manual speed and accuracy.

In a previous study, 50 physical therapists participated in a training experiment on 4 subtests (tracing, tapping, dotting, and copying). They were divided into 2 groups. One group practiced weekly with the right hand and the other group with the left hand. On the eighth trial both hands were retested. The group practicing with their left hand improved more on the left than the ones training with their right hand did on the right. Evidence of cross-examination was also significant. That is, even the group practicing with the right hand showed improvement in left-handed performance.

Recent Advances in the Pathology of Chronic Arthritis and Rheumatic Disorders

Douglas H. Collins, POSTGRAD. M. J., 31: 602-608, December 1955

What are now called the rheumatic disorders are a group of pathologically diverse diseases, unified only by their mode of clinical presentation, by the fact that they affect the locomotor system, and by the fact that they are painful, chronic, and mostly of unknown etiology.

Recent advances in the pathological knowledge of two of the major forms of chronic arthritis, osteoarthritis and rheumatoid arthritis, serve still further to distinguish between them.

In osteoarthritis, it is not yet known the precise conditions under which the initial changes occur in articular cartilage, but the ensuing changes can be explained by a mechanistic concept, having regard to the powers of repair and reconstruction with which the various connective tissue structures are endowed.

In rheumatoid arthritis, the major lesions in the joints are inflammatory and granulomatous. Disseminated lesions in many other parts of the body are of two main types: (a) microscopic inflammatory foci or lymphorrhages, (b) nodular lesions, often visible to the naked eye, which include one or more centers of connective tissue degeneration or necrosis. In addition, there are often generalized systematic disturbances, such as lymphoid hyperplasia, hyperglobulinaemia, and amyloidosis. The position of rheumatoid arthritis in relation to the hypothesis of 'collagen diseases' is briefly discussed in view of the misinterpretations which the free use of such a phrase is likely to engender.

Pain in the Neck and Shoulder, Common Causes and Response to Therapy

Edward M. Krusen, J. A. M. A., 159: 1283-1285, Nov. 26, 1955

The paper is concerned with a study of 800 patients with "cervical syndromes." In many cases there were no marked x-ray or neurological findings. The most common symptoms were neck and shoulder pains, headaches, paresthesia, weakness and sensory changes in the arm and hand. Psychogenic symptoms were also present in some cases. In most cases there were tense neck muscles, tender areas, and limitation of head and neck motion.

All patients could be grouped into 2 general categories: those with a history of relatable injury (328 patients) and those with no injury (472 patients). Four types of injury or accident were included in the first group: (1) auto accidents —usually whiplash injuries; (2) direct injuries to head and neck; (3) falls from varying heights; (4) indirect injuries. Time lapse between injury and treatment varied from one day to several years. Patients without injuries could be divided into the following classifications: (1) acute cervical fibrositis or myositis; (2) advanced cervical arthritis (including only those patients who had appreciable hypertrophic spurring); (3) scalenus syndrome; (4) herniation of nucleus pulposus in cervical spine; and (5) "tension neck" associated with environmental factors producing tension.

In general, treatment of the patients consisted of heat applications (usually short wave or microwave) for 30 minutes, deep stroking, kneading, and friction massage, and traction in a Sayre head sling. In addition all patients were instructed in active neck exercises with emphasis on rotation and lateral bending.

In both the injury and noninjury groups, with the exception of those with fibrositis, about 40 per cent showed good improvement; about 43 per cent showed moderate improvement; and about 17 per cent showed no improvement. In the group with fibrositis, there were 90.9 per cent with good improvement after an average of 7 treatments. The length of time elapsing from the onset of complaint until start of treatment had minimal effect on the degree of improvement. The effect of the duration of treatment on the degree of improvement was also insignificant.

Arthritic Disabilities of the Knee

J. G. Kuhns, BRIT. J. PHYS. MED. 18: 270-273, December 1955

The disabilities which are encountered in the knee joint in chronic arthritis can usually be prevented by early support of the knee and by the effective use of physical medicine. When the knee is acutely inflamed it should be supported in a plaster cast in a position of almost full extension until the inflammation begins to subside. Heat is of value. Occasionally special medicines, such as cortisone, are indicated to bring the inflammation into subsidence more quickly.

Exercises are begun, as soon as they can be done comfortably and are made more vigorous as the patient improves. When mild deformities are present, these are corrected without force by the use of serial casts, each correcting the deformity a little more. In the presence of fixed deformity there may be contractures, destruction of the joint, or ankylosis. These are corrected by release of the contracture, débridement, arthroplasty and arthrodesis. After surgical correction, physical medicine utilizes exercises which are prescribed until good function and muscular strength have returned.

Short-Term Group Therapy of Patients with Parkinson's Disease

M. E. Chafetz, N. Bernstein, W. Sharpe and R. Schwab, NEW ENGLAND J. MED., 253:961-964, Dec. 1, 1955

Group psychotherapy for patients with Parkinson's disease was instituted as a possible practical method for improving their adjustment to the disease. Three groups of patients from the Parkinson Clinic of the Massachusetts General Hospital were given the opportunity to attend these sessions. One-hour meetings were held twice a week for a period of six weeks. Although no single pattern of response to the disease was noted, a number of mechanisms were clearly observed. Denial and depression were the predominant reactions of patients. The group approach affected these reactions through supportive therapy that is, by the maintenance and encouragement of existing successful defenses. This was achieved in the atmosphere of a group situation where the patients readily opened up and began to question one another about their symptoms. They were relieved to find that they had similar difficulties over motor control, tremor, and rigidity. This provided a common bond, which enabled them to establish immediate group unity. This helped to satisfy their need to belong. Lessening of social isolation resulted from their going from their homes to the meetings. Friendships were established and intragroup support resulted from specific encouragement that members gave one another. Patients saw other group members who were incapacitated but carried on productive activities and were adjusting well.

Improvement in the adjustment of the patient was confirmed by reports from other personnel and clinics, and by subsequent requests from these patients for a resumption of the groups. It is believed that the procedure of group therapy is useful for other chronic illnesses.

The Accuracy of Measuring Leg-Length Differences

P. J. R. Nichols and N. T. J. Bailey, BRIT. M. J., (No. 4950), 1247-1248, Nov. 19, 1955

The assessment of the differences in leg lengths is of importance in many aspects of medicine. Because of the usual appreciable differences between recorded measurements of different clinical observers, it was decided to investigate the accuracy of this technic.

At the Royal Air Force Medical Rehabilitation Unit, Collaton Cross, 50 patients were selected at random. These patients, with a variety of complaints and injuries, were expected to provide for idiopathic and post-traumatic leg-length differences. Four physicians made independent measurements using the same technic and type measure. The patients were supine, knees extended and heels resting on couch. The distance between the anterior-superior iliac spine and the tip of the medial malleolus was recorded. Readings were made to the nearest ¼ inch, the lower reading being taken in the case of intermediate values.

When the physicians accepted ¼ inch as the minimum difference value for the diagnosis of "short leg," there was complete agreement in 40 per cent of the cases. If ½ inch were accepted as significant, they agreed 14 per cent of the time. The system-

atic differences between observers, although significant, was usually small. These small differences would probably arise even if the same observer made repeated measurements on the same patient. This experimental error has a standard deviation of ⅛ inch.

The over-all degree of accuracy of the measurement of leg lengths is such that differences of ½ inch or more may be accepted as diagnostically significant, but differences of ½ inch or less are not reliable unless based on the average of at least four measurements.

Observations on the Mechanism of Brain Concussion, Contusion and Laceration

E. S. Gurdjian, J. E. Webster, and H. R. Lissner, SURG., GYNEC. and OBST., 101:680-690, December 1955

The terms cerebral concussion, contusion, and laceration should not be used to denote varying degrees of nervous system damage, with concussion identified as representing the mildest form. With the information available at present it can be stated that concussion exists only when the upper brain stem is sufficiently involved by the injury. Brain contusions and lacerations may occur without concussion if the brain stem is relatively spared. If contusions and lacerations occur in the brain stem, a severe or fatal head injury is usually present.

The mechanics of head injury and certain experimental and clinical observations are discussed in this paper. The head may be subjected to direct or indirect injuries. As a result of forces produced by either direct or indirect injuries the following basic mechanical effects occur: the head is suddenly set into motion (accelerated); the head is suddenly stopped (decelerated); or the head is compressed and deformed with resultant squeezing of the contents. These basic mechanical factors may cause the following physical effects on the head and contents: (1) deformation of the skull producing compression of the contents due to decrease in volume; (2) a sudden increase in intracranial pressure at the time of impact; (3) mass movements of the intracranial contents; (4) distortion of the skull and the dural septa; (5) shearing off of a portion of the head and contents without necessarily producing an increase in intracranial pressure at the time of impact; and (6) shearing and tearing with high levels of increased intracranial pressure such as occur in bullet and shell fragment wounds.

These various effects of injury are discussed extensively. As a result of observations found, the authors arrived at the conclusions stated in the first paragraph. Excellent footnotes explaining various terms used and a list of references are included.

The Effect of Nicotine on Spinocerebellar Ataxia

John D. Spillane, BRIT. M. J., No. 4952:1345-1351, Dec. 3, 1955

An account is given of four male patients with spinocerebellar ataxia. Three cases were diagnosed as progressive spinocerebellar degeneration. All had similar clinical histories: the ataxia began when the patients were in their fifties—without previous nervous symptoms. They had progressive disturbance in gait, incoordination of the upper extremities, the characteristic cerebellar disturbance in speech, exaggerated deep reflexes, and no sensory loss. A fourth case was diagnosed as disseminated sclerosis. His condition was similar to the others except for an earlier onset and signs of spasticity as well as ataxia.

All 4 of these patients had previously noticed the effect of smoking on their speech and ataxia. Under study, the same was generally true. A most striking effect was noted in one patient—if he smoked only 2 cigarettes he could hardly walk or talk. Three years later, when the disease had progressed further, an injection of nicotine made walking and speaking impossible. Similarly in another of the cases smoking or injection of nicotine usually had a noticeable effect on gait and speech—lasting for about one hour. The stronger the tobacco, the more serious were the effects. The remaining two patients differed primarily in that speech was not especially affected. There were no other serious effects noticed from nicotine in any of the 4 patients, such as clouding of consciousness, vomiting, or effect on deep reflexes. It is suggested that the harmful effects of nicotine in these patients involves a disturbance of synaptic transmission of nerve impulses. Alcohol did not increase the symptoms.

Contrary to the study of these patients, there were 8 others with spinocerebellar degeneration who were not affected by nicotine. Nicotine injections also proved harmless in 20 different patients with various organic nervous system diseases.

The "Multifidus Triangle" Syndrome As a Cause of Recurrent Low Bank Pain

Phillippe Bauwens and Anthony B. Coyer, BRIT. M. J., No. 4951:1306-1307, Nov. 26, 1955

A cause of localized low back pain has been attributed to what has been termed the "multifidus triangle" syndrome. Physical exercise involving bending and twisting of the lumbar spine may bring on this condition.

The pain, attributed to either deep ligamentous or myofascial injury, is distinctly localized in a triangular zone on one of either side of the posterior surface of the sacrum just below the posterior superior iliac spine; the region in which lies the lowest portion of the multifidus muscle. Added pressure to this trigger zone intensifies the pain with occasional radiation to one thigh or buttocks of the same side. Recurrence of this pain after intervals of relative freedom has been a salient characteristic of this syndrome.

Twenty patients, 14 of whom were female, were examined in connection with this specific type of low back pain. All had complained of localized intermittent pain in the abovementioned area, which was made worse by excessive bending and lifting. Radiation of pain occasionally occurred as did an intensification of pain upon coughing. All patients derived benefit from bed rest.

These examinations revealed an increase of pain upon lumbar spine extension or a painful arc when the patient performed extension from the flexed position. With the patient in the prone position, resistance given to lumbar extension also increased pain. Upon palpation, a definite area of tenderness was localized on one side of the posterior sacrum within the "multifidus triangle." Straight leg raising and all other motions of which the lumbar spine is capable, were full and complete, producing no pain.

Treatment for this syndrome consisted of an injection comprised of a mixture of hydrocortisone, hyaluronidase and procaine hydrochloride. This injection was given directly

into the tender area. All had decreased pain after one treatment and were completely pain-free in one month. Other treatments, such as manipulation, deep heating, and massage had not proven as effective.

Cardiovascular Collapse in Acute Poliomyelitis

J. A. Hildes, A. Schaberg and A. J. W. Alcock, Circulation, 12: 986-993, December 1955

A series of 22 fatal cases and 6 surviving cases of cardiovascular collapse in acute poliomyelitis is reported in this paper.

Clinically, the syndrome came on acutely within one or two days after the onset of bulbar paralysis. It was characterized by apprehension, hyperthermia, fast regular pulse, and was sometimes preceded by a short period of hypertension. It then progressed to a state of shock with cold, sweating and cyanosed extremities. Pulmonary edema was a common terminal feature.

At autopsy, there was involvement of the medulla in all cases and pulmonary edema in all but one. Interstitial myocarditis was found in 75 per cent of the cases.

Treatment with nor-adrenaline appeared to be of benefit in some cases, but this was usually transient. Four of the six surviving cases had a mild form of the syndrome.

It was suggested that the mechanism for the syndrome is a combination of vasoconstriction resulting from a medullary lesion and a viral myocarditis. This leads to acute heart failure and pulmonary edema.

A New Spinal Pathway for Cutaneous Impulses

F. Morin, AM. P. PHYSIOL., 183:245-252, November 1955

It is generally accepted that cutaneous sensations are relayed in the cord along the dorsal funiculus and the spinothalamic tract. The dorsal spinocerebellar tract is classically considered a proprioceptive tract, not concerned with cutaneous impulses. Previous studies have suggested that perhaps neurons in the area of the spinocerebellar tract also conduct tactile impulses to the thalamus and cortex.

In this study 26 cats were used. After being anesthetized, sensory areas of the left cerebral hemisphere and the first three cervical segments were exposed. The right forefoot of the cat was stimulated in one of three ways: light tapping, bending a few hairs, or electrically. The evoked potentials were recorded at various upper cervical cord and cerebral levels.

By selective lesions in the cervical cord it was demonstrated that cutaneous impulses ascend not only in the dorsal funiculi, but also in the ipsilateral funiculus, probably the dorsal spinocerebellar tract. Through collaterals of this tract, the impulses are relayed to nuclei in the cervical cord. These nuclei of the spinocerebellar tract are located at the level of segments C_1 and C_2. As known previously, impulses from these nuclei travel by axons to the opposite thalamus and cortex. This additional pathway for cutaneous sensation may be called the spinocervico-thalamic tract. The spinal course being the dorsal spinocerebellar tract, is therefore cerebral as well as cerebellar.

Early Treatment of Club Feet and Flat Feet

Ross E. Gunn, BRIT. J. PHYS. MED., 18:273-278, December 1955

This is a report of an original method of handling foot deformities by a practitioner of medicine in Boone, Iowa. He describes his procedures for correcting varus and valgus deformities.

The ideal treatment is begun in the first week of life. The foot is maneuvered into position gently and slowly. This process sometimes takes many hours. It has been suggested that a nurse or masseur could be taught this procedure. The gravity treatment has also been suggested. In this the feet are attached to a crossbar by roller bandage in such a way that a portion of the baby's weight will slowly unwind enough of the varus in a day or two to allow application of the tractions. Dressings are then applied. These consist of a foot board well padded with sheet wadding, held in place on the sole of the boot by two strips of elastoplast, a cuff of origin for the traction, and rubber bands for traction.

The dynamic action of rubber on the stretch works continuously day and night. The dressings are watched carefully so that they stay in place and the stress is lessened or increased as needed. The amount of tension required for correction is only a few ounces. Mild cases will be corrected in about two months. Severe cases may be corrected in six months. It is emphasized that this method, or some similar method started immediately after birth, is better than any other known method started four to six weeks later. Also, it seems physiological to use dynamic adjustable forces rather than something static. Illustrations and case histories are included in the article.

Launching a Physiotherapy Department

Robert A. Anderson, HOSPITALS, 29: 84-90, December 1955

The superintendent of a New York rural hospital reports on the experience of establishing a fully organized department of physical medicine. The needs for a physical therapy department are discussed. Planning with the medical staff is necessary as a first step. It is important that the administration recognizes from the start that physical therapy is an extension of medical practice and not an isolated, self-sufficient technical service; that it is a service to the physicians, and not a form of competition with any modalities which may already have been provided for in conjunction with office practices.

The question of medical supervision is an all important one. Physical medicine should be viewed as a special branch of medicine. The patient's greatest welfare requires that he remain under close medical direction throughout all phases of his treatment. The average family physician is not competent to prescribe physical therapy intelligently, nor to properly assess its results. The physical therapist does not possess a medical background, cannot legally prescribe, and therefore does not provide medical supervision of patients. At this hospital, the full-time radiologist was appointed to this position.

Other items discussed are the financial arrangements, the referral policy, records annd equipment, and the need for a well qualified physical therapist. The article is summarized by emphasizing that the benefits to be derived from a soundly organized rehabilitation service are such that the general hospital of whatever size or location is well advised to consider developing such a facility if not otherwise available in the community.

The Physiology of Respiration in Infants and Young Children.

J. E. Hall, PROC. ROY. SOC. MED., 48:761-764, October 1955.

It has been shown that the respiratory system of the child develops most rapidly in the first two years and then more slowly during the rest of childhood. The changes in respiration occurring during the growth of the child present a problem in the management of anesthesia in pediatric practice. However, the discussion of these variations is also of interest to physical therapists, particularly those working with children who have respiratory problems.

The development of the lung is discussed. The lung volume enlarges rapidly in the first year and then slows down till after the second year when the growth becomes roughly parallel to the increasing weight of the child. The growth of the thoracic cage is also greatest in the first eighteen months. The shape is usually described as round in comparison to the adult chest. After the age of 2 years, the ribs, which have been almost horizontal since birth, start to slope downwards thus contributing to the increasing difference in the chest diameters.

Various studies have been made on respiration in the child. The results on the newborn agree very well. Averages for this group show 20 ml. as the tidal volume and 30 per minute as the rate. Because of the difficulty of noncooperation of children between the ages of 3 months and 8 years, a study was made on the respiration of children under anesthesia for these age groups. These studies showed a rapid increase in the tidal volume during the first two years. The rate changes in an inverse manner, starting rapidly, slowing down during the first two years, then remaining steady. During this period the respiration is almost entirely abdominal in character as the ribs still maintain their original horizontal position. The change in pattern of respiration is correlated with the gradual change in development.

The relatively large dead space of the infant is discussed in relation to anesthesia.

The Collective Unconscious as Manifested in Psychosis.

Edward F. Edinger, AM. J. PSYCHIAT., 9:624-629, October 1955.

Archetypes and the collective unconscious, as referred to by Jung and the author, are based on the recurrence of ideas and themes that bear similarity to symbols.

These ideas and themes are termed collective in that they are basic to the normal, to entire races, not only to the mentally ill. They refer to ideas such as "divine healer," "spiritual savior," "death-and-rebirth," which are foundations of religion and mythology. However, when the ego eases its identity to become completely identified with the archetype (seen in acute psychoses) or when there is complete severance of contact with the archetype (seen in simple schizophrenia), then mental illness develops.

The acute psychosis is considered to be a disturbance of the collective unconscious—a breakdown of a weak undeveloped personality. The patient is "living out a dream," his archetype patterns are uprooted from the deep unconscious and are fully exposed.

This is illustrated in the case history of 3 psychotic patients. The first was insecure, immature, and faced with responsibility beyond his emotional capacity. As a result he assumed the pattern of the "spiritual savior," an attempt of the unconscious to remedy his deficiency.

The second patient became obsessed with the idea of immortality, eternal life. He became preoccupied with ideas of space and time, claiming the secret of eternal life was in our grasp.

The third patient assumed the alchemistic idea of an "elixer of life." This patient, not having led a full life, in an unconscious state, had delusions of a richer, fuller life in the future.

It is felt that the unconscious attempts to compensate for the inadequacies of the conscious, which is done by expressing the true state of affairs in imagery of dream or vision.

Abstractors for April

The following members have assisted in the preparation of abstracts for this issue:

Jean Cuthbertson
Barbara Earley
Judith Kurtz
Margot Trimble

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The Final Program for the Second Congress of the World Confederation for Physical Therapy will appear in the May *Physical Therapy Review*

Book Reviews . . . . .

Low Back Pain in Industry. *By Henry H. Kessler, M.D., Ph.D., Medical Director, Kessler Institute for Rehabilitation. Paper; price $2.50. Pp. 227; illus. Commerce and Industry Association of New York, Inc. 1955.*

This book is the fifth of a series published by the Commerce and Industry Association of New York, Inc., in cooperation with the Self-Insurers Association.

Why do cases of back injury in workmen's compensation have a period of disability many times that of cases seen in private practice? This was the basic question and Dr. Kessler's analysis is a valuable contribution to the understanding of this and other problems of workmen's compensation.

A brief review of the evolution of workmen's compensation is followed by a chapter devoted to the medical aspects of low back pain. This includes an excellent synopsis of the various etiological factors, an evaluation of treatment, and emphasizes the role of anxiety especially in cases involving compensation.

The third and fourth sections are concerned with a detailed analysis of 160 case histories. The socio-economic background, the nature of the accident, original diagnosis, early treatment, clinical course, post-accident employment status and current status of each case is reviewed in as full detail as possible.

Dr. Kessler's summary and conclusions are both interesting and thought-provoking. He feels that these reports indicate that in 20 per cent of these cases diagnosis is consistent with degeneration of a lumbar intervertebral disc, while the remaining 80 per cent are characterized by an anxiety state. And while he in no way minimizes the difficulties presented, he points to the early care as the weakest link in the medical chain.

The physical therapist will note with concern the following statement. "Physical therapy was employed but had no influence on the course of symptoms or the period of disability; unfortunately, it was used primarily as a placebo, and not organized or integrated into a systematic program. Exercise was rarely used; occupational therapy never."

The author concludes that workmen's compensation has not solved the problem and his last chapter offers numerous constructive suggestions for legal and medical changes. He emphasizes the urgent need for early referral for rehabilitation, evaluation, and treatment.

This study should be of great interest to anyone concerned with these cases.

A Short History of Medicine. *By Erwin H. Ackerknecht, M.D., Professor of History of Medicine, The University of Wisconsin Medical School. Cloth; price $4.50. Pp. 276; illus. The Ronald Press Company, New York, 1955.*

This book is more than an account of historical data of the medical profession. The author interprets the practical meaning for modern medicine as each major trend develops and points out its significance in medical practice, public health and preventive medicine, as well as social and economic problems. In the foreword he states "Only those who have followed the slow and painful growth of the art and science of medicine, only those who know how much has been accomplished and how much to be done. . . . can feel appropriate pride in the medical profession . . . can acquire the humility so necessary, to all humans, laymen and doctors."

Long experience in teaching and association with medical practitioners convinced this author that there was a need for a history of medicine suitable for medical students, the busy doctor, and other allied professions as well as laymen interested in health problems. To meet that need he has condensed "the fascinating story of man's progress in the science and art of medicine" into twenty short chapters. The author is convinced that no one really understands medical history until he has read at least a few original texts; therefore, an appendix, "Suggestions for Further Reading, "offers a bibliographical guide for each of the chapters to assist the reader who wishes more historical details on a particular person, problem, or period.

The first nine chapters of this book are devoted to Paleopathology, Paleomedicine, Primitive Medicine, the Medicine of Ancient Civilizations, of Ancient India and China, Greek Medicine, Medieval Medicine, and Renaissance Medicine. In these chapters the gradual development up to the seventeenth century is briefly covered. In primitive medicine the belief in supernatural forces was an influential factor. Later social changes such as the greater concentration of the population resulted in the demand for greater public health measures in the ancient civilizations. Early Greek medicine was influenced by the philosophers of the period and the greatest development was in clinical observation. Hippocrates and his followers were interested primarily, not in diagnosis, but in prognosis and treatment of an individual, not only in the disease. Medieval medicine according to the author differed from modern in that it was centered in libraries not in laboratories or in hospitals. During this period surgery, in most areas, fell into the hands of barbers, bath keepers, and quacks of every description. Due to great epidemics in this period the need for public health measures arose. Quarantine was developed and control of food in the markets was instituted, legal regulations covered public health measures and professional organizations. Hospitals first became medical institutions instead of philanthropic institutions used as a refuge for the old and disabled. The Renaissance is considered by this author as the opening of the modern period of medicine. Advances were made in clinical bedside teaching, the work of Vesalius was the beginning of modern anatomy, and physiology and pathology became established under these names.

The remaining chapters of the book cover medical history from the beginning of the seventeenth century to the present. Separate chapters are devoted to the basic sciences, clinical medicine, bacteriology, public health and professional developments, and medicine in the United States prior to 1900. Of special significance in the period of modern medicine is the discovery of the circulation of the blood, the application of the new sciences, physics and chemistry, the integration of pathological anatomical data with clinical observation, the advancement of medical education and the publication of medical journals. The author reminds the reader that during the first half of the nineteenth century "the developments in medicine, in technology and in science during this period were paralleled in economics by the growth of industry and capitalism, and in politics by the evolution of democracy and nationalism." Medical history during the

nineteenth century is characterized by the development of specialties which was made necessary by the increase in knowledge. For convenience the specialties are divided into medical and surgical specialties. Orthopedics, one of the earliest surgical specialties, grew from the interest in crippled children which the author states was the result of the philosophical movement of Enlightenment in the eighteenth century. Throughout the history mention is made of the use of massage and baths in the age of primitive medicine, exercises in early Greek gymnasiums and by Galen in Rome, and electrotherapy after the discoveries of Galvani and Volta but the author states that physical therapy "owed its first reawakening, after a neglect of centuries, to the period of Enlightenment" and the special attention given to massage and gymnastics after the establishment of orthopedics as a specialty. An additional development of specialties was the "nontreating doctor" who deals exclusively with the health of large groups of people.

In closing the author states, "If scientific progress can be kept at present levels—which is no foregone conclusion but needs untiring and intelligent efforts; if the social gap can be bridged between medical knowledge and its availability to the majority of the community; if civilization is able to survive the catastrophes which threaten it; then the most of the history of medicine so far may hardly be more than "prehistory" to future historians and doctors. Yet their debt to their predecessors will be as immeasurable as is ours to the anonymous caveman who once in the dim past discovered the use of fire."

This is a readable, condensed history of medicine and should be of special interest to everyone associated with the medical profession.

Why Have Pain When the Cure Is Often in Your Own Hands? *Molly Turner, M.C.S.P., Superintendent Physiotherapist, Department of Physical Medicine, University College Hospital, London. Paper; Price 2/—; Pp. 23; illus. Wilding & Son Ltd., Castle Street, Shrewsbury, 1955.*

In the preface the author states that many people suffer from aches and pains because they use their bodies incorrectly. The author is well qualified to write on this subject since she has observed and worked with hundreds of patients presenting these complaints over the past twenty years in a large London teaching hospital. This little book was written because many had expressed a wish that something simplified be written about the subject. The book is written in question and answer style with a patient asking the questions and the physical therapist answering.

The word, posture, is not mentioned but rather great stress is placed on body balance. The text is profusely illustrated with diagrams showing correct body balance and the effects of gravity and other forces which tend to throw the body out of alignment. Miss Turner also presents a method for teaching the patient proper body balance. Of interest to physical therapists in this country will be the fact that no mention is made of pelvic tilting. The author accomplishes this by having the patient raise the breast bone, which automatically tightens the anterior abdominal wall.

The book is a handy pocket size and reads quite easily. For this reason it may be useful in presenting simplified material on body balance to the patient. For any complete discussion on the subject, however, the reader will have to consult more extensive sources.

Primary Anatomy. *By H. A. Cates, M.B., late Professor of Anatomy and Director of the School of Physical and Health Education, University of Toronto; and J. V. Basmajian, M.D., Associate Professor of Anatomy, University of Toronto. Third Edition. Cloth; price $5.75. Pp. 339; illus. 441. The Williams and Wilkins Co., Baltimore, 1955.*

This is a textbook to be used mainly by nonmedical college students. "Essential principles and facts of anatomy are emphasized" which have gratifying application to the needs of physical therapy students. A systematic approach rather than a regional one is used. It is up to date, accurate and interesting in content. The material is chosen for its practical application. There are a few statements of muscle function which are stated as being controversial.

The drawings are excellent. They are simple and schematic. Most are original and are specific for the needs of nonmedical students. Professor Cates feels gross anatomy should be offered to all beginning students at the same time. There are only a few illustrations reprinted from other well known standard anatomy books. The layout usually places the diagram or drawing on the same page as the description.

Language is simplified and meaning is clear. Positional terms such as posterior, anterior, medial, lateral, proximal, distal are not used as much as above, below, in front, in back to indicate position relationships. This keeps the material less complicated, but I missed the medical terms.

Professor Cates had "many years of experience" before the first edition in 1948. His book is a plan for a course which will meet the needs of beginning "Nurses, Physical Therapists, Occupational Therapists, Health and Physical Educationists without being too burdensome for any." I think the author succeeded very well in presenting a text for a varied group of students. This is not a different approach, but one that is clear and simple with many facts I have not read anywhere before.

Backache. *By Frank R. Ober, M.D., Professor Emeritus in Orthopedic Surgery at Harvard Medical School, Orthopedic Surgeon-in-Chief, Emeritus, at Children's Hospital, and Consultant, Emeritus, at Peter Bent Brigham Hospital, Boston. Leatherette; price $3.00. Pp. 89; illus. Charles C Thomas, Springfield, Illinois, 1955.*

The author needs no further recommendation as a person well qualified to present this monograph on *Backache*. Writing from long experience, recourse to text or reference is hardly necessary; as a consequence, the reader is provided with a bibliography hardly worth the inclusion. A monograph, however, can be construed only as a summary of tested knowledge and a suggestion of what years of study and observation have brought to light.

In a beautifully bound edition, Dr. Ober has quite successfully presented a "broad view of the lame back problem as a whole." Of necessity, there is but a cursory review of the anatomy and physiology of the spine, and any pathological discussion is dismissed as beyond the scope of the work. By way of introduction, the doctor regretted the tendency to di-

agnose any backache by such "wastebasket" terms as "sacroiliac" or, currently, "ruptured disc." A lengthy outline and résumé of possible etiological factors of which backache may be a symptom discourages any such superficial approach.

Following a suggestion of likely disclosures from the medical history as well as patient's symptoms, a thorough physical, neurological, and radiological examination is outlined. Supplementing a concise but informal text is an excellent series of X-ray reproductions with line drawings to illustrate positioning of the patient for X-ray examination. Methods of testing and stretching tight structures are also shown by line drawings.

The relief of pain is given primary consideration and recommended treatment is directed toward the elimination or alleviation of causative factors. Gentle exercise for improving muscle tone and stretching of tight structures are performed within pain-free range. The author advocates the use of well-fitted corsets which can do much to support the trunk and relieve pain producing tension; at the same time they should conform to the body contours and permit more effective action than the less mobile back brace. Mention is made of some of the more common operative measures and postoperative management.

In conclusion, Dr Ober states that the material is presented as a guide for the examining physician, and in its way encourages a more thorough examination of the patient with backache. Therapists, X-ray technicians, and others who deal with the patient with low back pain would do well to familiarize themselves with the content of this little book.

The Physiological Basis of Medical Practice. A Text in Applied Physiology. *By Charles Herbert Best and Norman Burke Taylor. Sixth Edition. Cloth; price $12.00; Pp. 1355, The Williams and Wilkins Company, Baltimore, 1955.*

The sixth edition of "Best and Taylor" has been thoroughly revised and brought up to date. Changes and improvements are found throughout the book, and in its new form it is even better than in previous editions. Balance of subject matter, as it has always been, is characteristic of this edition. There is none of the overemphasis on certain aspects of physiology which in some textbooks betrays the special research interests of its senior author or editor.

Another characteristic of the book which has been maintained is the close relation between physiology and clinical application. This is not to imply that it is a textbook of medicine, rather its value is best expressed by the title, for it is truly a textbook of the physiological basis of medicine. This undoubtedly explains its outstanding success as a medical school textbook. It also is a cherished possession of many clinicians who like to have their "Best and Taylor" on hand to look up the physiological background of a clinical problem that baffles them. Physical therapists will appreciate this book for the same reason even though some of the specific questions in physiology dealing with physical medicine could of course not be allotted too much space without upsetting the balance of the book.

There are nine major divisions dealing with blood and lymph, circulation, respiration, urine excretion, digestion, metabolism and nutrition, endocrine glands, the nervous system, and the special senses. A special feature of this new edition is the very much improved index. This remains an excellent textbook of physiology.

The reviews here published have been prepared by competent authorities and do not represent the opinions of the American Physical Therapy Association.

Our Book Reviewers for April

Gertrude Beard, Director of Physical Therapy, Bethany Hospital, Kansas City, Kansas.

H. D. Bouman, M.D., Professor of Physical Medicine, University of Wisconsin, Madison.

Olive C. Farr, Physical Therapy Director of the Physical Therapy Course, State University of Iowa, Iowa City.

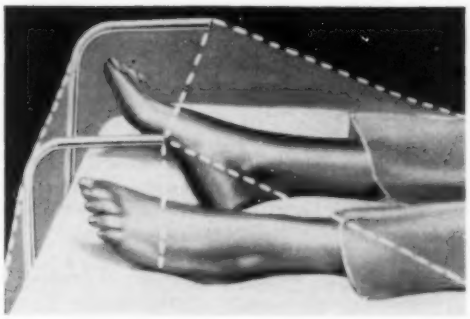
Dorothy I. Glidden, Capt., AMSC, Chief, Physical Therapy Department, U. S. Army Hospital, Fort Polk, Louisiana.

Julianne Cunningham Steffens, Senior Physical Therapist, State Veterans' Home, and Hospital, Rocky Hill, Connecticut.

Catherine Warren, Chief Physical Therapist, Peter Bent Brigham Hospital, Boston, Massachusetts.

What's New . . . . . .

110. Blanket Support



Blanket Support fits all beds without attaching permanently. Arms fold down when bed is made. Manufacturer states that this item will last a lifetime. Better Sleep, Inc.

111. Electric Typewriter and Attachments for the Handicapped

The IBM Keyboard Rest is a plate which mounts directly over the keyboard and permits the hands to rest or depress the selected key button without inadvertently striking other key buttons. Other attachments available are the Paper Roll Holder and Arm Rest. International Business Machines Corp.

For more information on items write to The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

New items which may be of interest to physical therapists will be mentioned in these pages each month. The accompanying explanations are made by the manufacturers and have not been investigated by the *Physical Therapy Review.*

112. Grip Device for Tubs

Lifeguard averts tub falls. Made in three models for all tubs—roll-rim, or built-in with rims 5 inches or less, or more than 5 inches—the low priced grip device is manufactured by Bollen Products Co.

Publications and Reprints

RECRUITMENT

Physical Therapy Offers You a Rewarding Career — An illustrated brochure with information for prospective students about physical therapy, the course of study, and opportunities for a career.

Physical Therapy Programs—1956—A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

Sources of Financial Assistance for Physical Therapy Students — 1956.

Poster: Join Ranks in a Proud Profession—Career poster for bulletin boards.

Career Facts—A brief on needs and opportunities.

Physical Therapy Record—A news tabloid with pictures depicting work of physical therapy for lay groups.

Open House Plans and Suggestions—A practical easy-to-use guide for a physical therapy department Open House for prospective students.

ORGANIZATION

Code of Ethics of the American Physical Therapy Association.

Personnel Policies for Physical Therapists.

Use of Nonprofessional Personnel — An illustrated pamphlet to assist the physical therapist to determine the need for nonprofessional personnel and to give guidance on inservice training and utilization.

Approved Schools and Courses of Physical Therapy 1928-1954.

Essentials of a Hospital Department — Physical Therapy (To members 25¢).

A Bibliography on Supervision — Whitcomb. (15¢)

State Registration of Physical Therapists—Abstracts of state laws regarding registration of physical therapists.

Chapter Directory — List of chapter presidents and secretaries and district chairmen.

SCIENTIFIC REPRINTS

Home Care Instructions — Olmsted (15¢)

Active Games for Physically Handicapped Children — Gump and Yuen-Hung Mei (10¢)

Education for Childbirth: With Emphasis on the Role of the Physical Therapist — Flanagan, Heneage and Ashe (15¢)

Physical Therapy in the Treatment of Rheumatoid Arthritis — Nesbitt (10¢)

Administration of a Community Rehabilitation Center — Furscott (10¢)

Evaluation of Strength and Motor Development in Infants — Zausmer (20¢)

Physiology of the Heart and Circulation and Its Clinical Application in Physical Medicine — a bound edition of papers by nine authors with an introduction by Harry D. Bouman, M.D., Coordinator. (50¢)

Physical Therapy Program for the Upper Extremity Amputee — Jampol (10¢)

Physical Therapy in a Small Hospital — Stamm (15¢)

VISUAL AIDS

The following visual aids are available on loan to members and chapters upon request. They should be requested one month in advance of the date to be shown and return shipping costs must be paid by the borrower.

Peripheral Nerve Injuries: Upper Extremity — A set of 17 black and white 3¼ by 4 inch slides illustrating nerve injuries of the upper extremity.

Recruitment

Within Your Hands — Black and white 17½ minute sound picture depicting the education and opportunities for the profession of physical therapy. Each chapter (and district) also has a copy of this film. A special 14½ minute version for telecasting is available from the National Office.

Physical Therapy, A Career of Science and Service — A color filmstrip to interpret physical therapy to high school students and lay groups. Each chapter (and district) has a copy of this and additional copies may be purchased from the National Office at $4.50 per print.

Professional

Slides

Underwater Exercise — A set of 26 Kodachrome slides made at the Orthopaedic Hospital in Los Angeles describing equipment and technics of underwater exercise.

Special Issues of the Review

Polio Issue (July 1951) (25¢)

Polio Issue (July 1952) (25¢)

Polio Issue (July 1953) — 50¢ (10 to 50, 35¢; 50 or more, 25¢)

Cerebral Palsy Issue (February 1952) (25¢)

Functional Issue (November 1949) (25¢)

Rehabilitation Issue (November 1955 — 75¢ (10 to 50, 50¢; 50 or more, 35¢)

Abstracts Reprinted

"Haltung," an Abstract from Body Posture by Magnus, and "Head Posture and Muscle Tone," Clinical Observations by A. Simons, abstracted by Signe Brunnstrom, have been reprinted in one pamphlet.

Reprints can be ordered from the American Physical Therapy Association, 1790 Broadway, New York 19, New York. The cost of the pamphlet containing both abstracts is $1.00.

All requests should be addressed to

American Physical Therapy Association

1790 Broadway, New York 19, New York

Classified WANT-ADS

CEREBRAL PALSY day nursery, Baltimore, Maryland, in immediate need of accredited physical therapist. Professionally directed by Winthrop M. Phelps, M.D. Five-day week of 35 hours. One month summer vacation and all legal holidays. Salary scale based on recent surveys. Write Edith Flavin, Director, Physical Therapy, Children's Rehabilitation Institute, Reisterstown, Maryland.

POSITIONS AVAILABLE for asst. supervisor and staff therapists (male or female). General hospital clinic w/ outpatient service, treating all types of cases. Excellent starting salary with annual increases. Annual paid vacation, sick leave and holidays. Laundry provided. Reply: Miss Mary Mason, Physical Therapy Dept., The Johns Hopkins Hospital, Baltimore 5, Md.

Qualified PHYSICAL THERAPIST for staff position in a 320-bed general hospital. Completely remodeled and well equipped department, wide variety of cases divided about equally between hospital and outpatients. Liberal personnel policies. Salary open, no experience necessary. Excellent opportunity in a growing community located in the Valley of the Sun, winter capitol in the Southwest. Apply Good Samaritan Hospital, Phoenix, Arizona.

STATE OF WASHINGTON: Public School program for physically disabled children; desires a physical therapist in an established program. This position offers a 35-hour week, and three months' summer vacation plus all school holidays. Light case load. Address replies to Box 100, care of the Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

PHYSICAL THERAPIST FOR EXPANDING HOSPITAL: New, modern, general hospital located on Chicago's North shore near parks and beaches now expanding bed capacity from 110 to 275 beds. Excellent potential for advancement in growing department. Many liberal employee benefits including free Blue Cross and a tuition refund plan. Write, Personnel Director, Louis A. Weiss Memorial Hospital, 4646 Marine Drive, Chicago, Illinois.

WANTED: PHYSICAL THERAPIST for suburban Philadelphia public health nursing agency to give consultant services to staff of 25 nurses and direct services to homebound patients. Salary dependent upon experience. Social security, retirement, 40-hr., 5-day week. Liberal personnel policies. Position open now. Apply Executive Director, Community Nursing Service, Delaware County, 60 S. Lansdowne, Lansdowne, Pa.

WANTED: PHYSICAL THERAPIST to take charge of physical therapy department of 150-bed general hospital. Good starting salary with semiannual increases, five-day week, vacation, holiday, sick time benefits, and participating insurance program. Write Robert D. Howe, Administrator, Billings Deaconess Hospital, P. O. Box 2564, Billings, Montana.

Classified WANT-ADS

RATE CHANGE

The rate is now 75¢ a line. After

May 1, 1956

it will be $1.00 per line of 50 typewritten characters and spaces. Address inquiries or copy to the:

Physical Therapy Review
1790 Broadway, New York 19, N. Y.

WANTED: FEMALE PHYSICAL THERAPIST to work in Community Hospital physical therapy department. Cases are of wide variety, consisting of orthopaedic, polio, and general hospital work. Salary is good—dependent upon experience. Two weeks' vacation with pay and one week sick leave. Contact J. H. Monlux, 238 Fourth St. (rear of Community Hospital at Fourth and Arrowhead), San Bernardino, Calif.

A STAFF PHYSICAL THERAPIST for rapidly expanding rehabilitation center, either experienced or inexperienced therapist acceptable. Excellent working conditions, 37½-hour work week, good pay, good personnel policies, good medical supervision. Crossroads Rehabilitation Center will move into a new building May 1. Wonderful opportunity for staff growth and promotion. Contact Roy E. Patton, Executive Director, 3001 North New Jersey Street, Indianapolis, Indiana.

POSITION NOW AVAILABLE in 275-bed progressive general hospital for a qualified physical therapist. New, well equipped, fully air-conditioned department. Treatment of acute and convalescent polio, and general P. T. Liberal salary. Excellent working relationships. Apply Mr. Neil Wortley, Administrator, Burge Hospital, Springfield, Missouri.

WANTED: PHYSICAL THERAPIST, staff, in a new department recently equipped with full hydrotherapy, electrotherapy and exercise rehabilitation equipment in 330-bed hospital located in near west side of Chicago. A golden opportunity for an ambitious, dynamic therapist to develop an exceptional department. Excellent working conditions; salary commensurate with experience and ability. Write to: Administrator, St. Mary of Nazareth Hospital, 1120 N. Leavitt St., Chicago 22, Illinois.

ORTHOPEDIC CLINIC with three surgeons needs a qualified physical therapist to work in two-therapist department. Salary dependent upon experience. Write: Mrs. Margaret Steele Smith, R. P. T., Knight, Ware and Sutherland Clinic, 2618 Welborn Street, Dallas, Texas.

Continued on next page

Classified WANT-ADS

PHYSICAL THERAPIST, member APTA or ARPT. Liberal personnel policies. Good working conditions. State salary expected. Write Personnel Office, Queen's Hospital, Punchbowl and Miller Sts., HONOLULU, HAWAII.

Theda Clark Memorial Hospital, Neenah, Wisconsin, needs a QUALIFIED PHYSICAL THERAPIST. Hospital has 165 beds; department located in new building. Post polio and in- and outpatient work. Competent medical staff, excellent working relationships. Good starting salary; 40-hour week; 2 weeks' vacation; 6 paid holidays, and sick leave benefits. Recent graduate will be considered. Write to Esther C. Klingmann, Administrator.

QUALIFIED STAFF PHYSICAL THERAPIST. Female preferred; 450-bed hospital, 40-hr. week. Social Security, sick leave and holiday benefits. Three weeks' vacation. Salary open. Apply: Personnel Office, Lancaster General Hospital, 525 North Duke Street, Lancaster, Pennsylvania.

PHYSICAL THERAPIST: for Crippled Children's Service, Massachusetts Department of Public Health. A Civil Service appointment. Good salary with yearly increments. Paid vacations, sick leave, insurance and retirement benefits. Apply to Miss M. Foster, Room 524, 88 Broad St., Boston 10, Massachusetts.

PRIVATE CLINIC and HOSPITAL affiliation open to accredited therapist, preferably female. Divide time between private clinic of fourteen physicians and 100-bed accredited hospital. Good working conditions: Salary open. For further details write: D.E. Caywood, Smith-Glynn-Callaway Clinic, 1211 S. Glenstone, Springfield, Missouri.

WANTED: Qualified physical therapist for staff position in a 650-bed University teaching hospital including 30-bed rehabilitation center. Two-week vacation, six paid holidays, sick leave benefits. Attractive starting salary. Experience not necessary. Write Harold N. Neu, M.D., Creighton Memorial St. Joseph's Hospital, Omaha, Nebraska.

CHILDREN'S REHABILITATION INSTITUTE, Reisterstown, Maryland, needs qualified physical therapist. Professional direction under Winthrop M. Phelps, M.D. Opportunity for study. Five-day week under 35 hours. Quarterly two-week vacations. Salary scale based on recent surveys. Write Edith Flavin, Director, Physical Therapy.

PHYSICAL THERAPIST: In Hospital-School for rehabilitation of children with orthopedic handicaps. Complete interesting program. Good salary, merit increases. Annual paid vacation, sick leave, excellent retirement plan. Write Vera E. Dennis, Director of Physical Therapy, Illinois Children's Hospital-School, 2551 N. Clark, Chicago 14, Ill.

WORK IN TEXAS: Physical therapists needed at neuromuscular rehabilitation center; new air-conditioned building; all modern equipment; three-level pool; corrective gymnasium; assistive personnel. Real opportunity for advancement to qualified therapists, male or female. Contact Chief Physical Therapist, Richard E. Freeburg, Hedgecroft, 5120 Montrose Blvd., Houston, Texas.

WANTED: QUALIFIED PHYSICAL THERAPIST to start Home Service Program with an Outpatient Physical Medicine, Rehabilitation Center. Good personnel policies. Salary dependent upon experience. Write: Gloria J. Fitzpatrick, RPT, Director, Ingham County Curative Workshop, 615 North Capitol, Lansing, Michigan.

PHYSICAL THERAPIST WANTED for position in a modern, new 600-bed, university teaching hospital. Normal work week of forty hours, two-week vacation, eight paid holidays, liberal sick leave and retirement plans; starting salary dependent upon training and experience. Write Justus A. Lehmann, M.D., Associate Director of Physical Medicine and Rehabilitation, Ohio State University Hospital, Columbus 10, Ohio.

IOWA METHODIST HOSPITAL, Des Moines, Iowa, needs qualified physical therapist. Hospital has 400 beds, including 100-bed Raymond Blank Memorial for Children. Postpolio cases and in- and outpatient work. Competent professional staff and assistants, excellent working relationships. Apply: Bruce D. Root, Personnel, Director.

IMMEDIATE OPENING for qualified physical therapist in new United Cerebral Palsy Clinic-School. To work with occupational and speech therapist. Five-day week, vacation, sick leave, salary open. Apply: Leslie C. Meyer, M.D., Medical Court, Greenville, S. C.

PHYSICAL THERAPIST for Rehabilitation Center in industrial area. Good starting salary, regular increments, 40-hr., 5 wks. vac., S.S., paid hospitalization. Apply Christine K. Kline, P.T., Technical Director, 209 W. Woodland, Youngstown, Ohio.

Qualified PHYSICAL THERAPIST wanted for active well equipped department in 275-bed general hospital, located in a pleasant university city. All types of patients treated, excellent opportunity for therapist interested in a well rounded program. Forty-hour week; salary open. Apply Personnel Director, Sacred Heart General Hospital, Eugene, Oregon.

PHYSICAL THERAPY Department needs additional therapist; 310-bed hospital with expansion program underway. Modern equipment, substantial salary, good personnel policies. Pleasant surroundings in fine sports area; ¾ hour drive to downtown Detroit. Write: Miss Marie C. Hickey, Physical Therapist, St. Joseph Mercy Hospital, Pontiac, Michigan.

Classified WANT-ADS

WANTED: PHYSICAL THERAPIST for department in a 76-bed hospital. Contact Larimer County Hospital, Fort Collins, Colorado.

WANTED: PHYSICAL THERAPIST to work in rapidly growing rehabilitation clinic. Four weeks' paid annual vacation, excellent salary, paid sick leave, five-day week. Case load consists of orthopedic and neuromuscular disorders. Experience not necessary. Contact: Marilyn J. Gibbin, Administrator, Community Rehabilitation Clinic, 614 Dartmouth Ave. S. W., Canton, Ohio.

WANTED: QUALIFIED PHYSICAL THERAPIST for staff position. Expanding department in 250-bed general hospital near Boston, Mass. In- and outpatients referred by medical staff with some post-polio cases. Five-day, 40-hr. week, paid vacation, sick leave and Social Security. Address replies to Box 93, care of the Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

QUALIFIED PHYSICAL THERAPIST for expanding department in 560-bed general hospital. All types of therapy for in- and outpatients. Good starting salary and generous fringe benefits. Write Personnel Director, The Allentown Hospital, Allentown, Pennsylvania.

QUALIFIED PHYSICAL THERAPIST needed for supervisor of department in children's orthopedic hospital. Good salary, 15 days' vacation, 15 days' sick leave, 40-hour week. Contact Leo P. Schwartz, Administrator, Carrie Tingley Hospital, Truth or Consequences, New Mexico.

WANTED: ADDITIONAL physical therapist for 140-bed Children's Hospital. Treatments stress rehabilitation. Salary good, 3 weeks' vacation, 2 weeks' sick leave, 40-hour week. Apply: Jewell Radford, Physical Therapy Department, Mary Free Bed Children's Hospital, Grand Rapids, Michigan.

PHYSICAL THERAPIST for active, well equipped department in teaching hospital affiliated with Northwestern University. Located in pleasant residential suburb on Lake Michigan. Forty-hour week. Good salary. Apply Personnel Director, Evanston Hospital, Evanston, Illinois.

STAFF PHYSICAL THERAPIST, male or female for specialized physical therapy under medical and physiatric direction at expanding in- and outpatient department with ample opportunity for research. Write: Gabriel Steiner, M.D., Medical Director, Michigan Multiple Sclerosis Center, 1800 Tuxedo, Detroit 6, Michigan.

POSITIONS AVAILABLE for qualified physical therapists for active rehabilitation department in modern 500-bed, chronic disease hospital. Salary open. Four weeks' vacation. Sick benefits. Lunches. Apply Superintendent, St. Barnabas Hospital, New York 57, N. Y.

WANTED: PHYSICAL THERAPY CONSULTANT to carry out statewide program of planning, organizing and directing physical therapy services. Must have completed approved course in physical therapy; at least three years' experience and practice in physical therapy of which one year must have been in supervisory capacity. Good salary. Merit System. Lease car transportation available. Write Hale Laybroun, State Health Department, Cheyenne, Wyoming.

QUALIFIED PHYSICAL THERAPIST wanted immediately in an outpatient clinic, phys. disabled; 5-day week, 2 wks. pd. vacation and sick leave annually. Excellent starting salary. Direct own dept. Almost fully equipped new facilities. Write Mr. Paul B. Dobbs, Box 2952, Odessa, Texas.

QUALIFIED PHYSICAL THERAPIST (male or female) for a 470-bed hospital. Well equipped physical therapy department including pool. Many employee benefits, including paid vacation and sick leave. Contact Personnel Office, St. Luke's Hospital, 4400 J. C. Nichols Parkway, Kansas City, Missouri.

QUALIFIED PERSON to plan, establish, and direct new Work Evaluation Center in Toledo. No funds to raise; salary open. List professional training, experience, references and approximate date available. Goodwill Industries of Toledo, 601 Cherry Street, Toledo 4, Ohio.

WANTED: QUALIFIED PHYSICAL THERAPIST, male or female, capable of organizing department for new 100-bed hospital with rapid expanding medical and orthopedic requirements. Good salary; 5-day week, vacation, holidays and sick leave. Write: Sister M. Presentation, R.S.M., Mercy Hospital, 2601 Electric Ave., Port Huron, Mich.

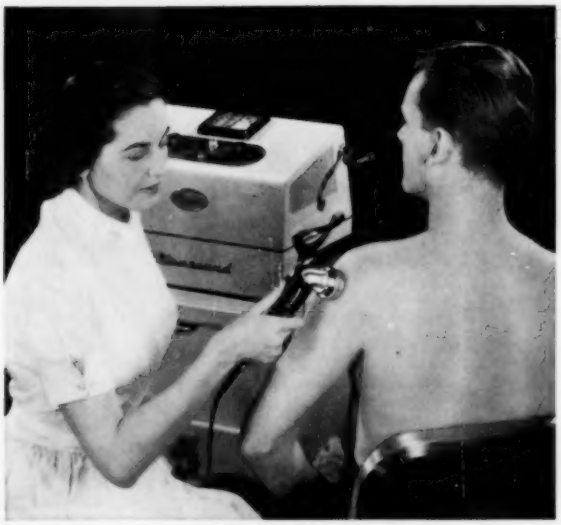
PHYSICAL THERAPIST: EXPERIENCED, qualified; to supervise new department in 129-bed general hospital. Salary and maintenance open. Excellent opportunity. Address replies to Director, North Adams Hospital, North Adams, Mass.

WANTED: QUALIFIED physical therapist, male or female for outpatient department. Sponsored by Crippled Children Society and School for treatment of handicapped children. Salary open. Contact Mrs. R. N. Griesheimer, 100 S. Mulberry Street, Chillicothe, Ohio.

QUALIFIED PHYSICAL THERAPIST, either male or female, for staff position 350-bed general hospital. Salary dependent on qualifications and experience, merit increases. Vacation and sick leave pay. St. Rita's Hospital, Lima, Ohio.

PHYSICAL THERAPISTS—California State Government offers challenging and worthwhile employment in hospitals, prisons, special and public schools, and veterans' home. California registration or license required. Physical Therapist I requires no experience; Physical Therapist II and Physical Therapist for Physically Handicapped Children require one year of experience. Forty-hour week, 3 weeks' paid vacation annually, excellent retirement plan. Write immediately to California State Personnel Board, 801 Capitol Avenue, Sacramento 14.

PHYSICAL THERAPIST in Center for handicapped children. Patients mostly cerebral palsied. Center located on college campus in Billings, Montana, a city of about 65,000 population. Merit System coverage with job security, liberal vacation and sick leave, retirement plan plus Social Security. Salary dependent upon experience and qualifications. Write State Board of Health, Helena, Montana.



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